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INTRACRANIAL INJURIES OF THE FETUS*

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It would be difficult to overestimate the importance of these brain injuries. Trauma done to other portions of the nervous system, especially to the spinal cord, are also of tremendous importance, as are the injuries of the peripheral nerves of which damage to the brachial plexus is not uncommon. Unassociated with other injuries those of the peripheral nervous system do not usually result fatally. Cord injuries, especially those of the cervical cord, are responsible for many fatalities and are particularly common following version and breech extraction.

Traumatic lesions of the peripheral nerves and of the cord at various levels are responsible for much of the permanent disability resulting from birth trauma. The orthopedists, neurologists, and pediatrists see many of the unfavorable results so often charged to the obstetricians, who may be cognizant of the immediate results but too infrequently follow up the remote consequences of the la-

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bors and deliveries. There are many visceral and other injuries which can properly be attributed to labor, but it is not possible to give consideration to all the manifold injuries which may occur in association with parturition.

I have selected the intracranial type of injury because the importance of these injuries is not generally recognized and the symptoms are often attributed to the so-called asphyxia neonatorum. Suffocation and aspiration occur quite frequently and are caused by a variety of conditions leading to interference with the proper oxygenation of the fetal blood, which results in circulatory changes. Suffocation leads to premature attempts at respiration, with the dangers of aspiration of various materials. Alterations in the circulation and pressure within the cranium lead to circulatory changes in the fetus, which in turn may cause stimulation or paralysis of the respiratory center and cause the so-called asphyxia neonatorum, either livida or pallida, which may or may not be complicated with aspiration.

The simplest form of intracranial injury is from the long continued intermittently increased and decreased pressure on the fetal head, especially after it passes the inlet. The caput succedanum with the ecchymosis and edema of the scalp and the less frequent but more important cephalhematoma externa have their counterparts in the edema, petechial hemorrhages and cephalhematoma interna which occur within the cranial cavity. These lesser injuries pass through various intermediate stages to the most serious and extensive trauma, with fractures of the bones, tearing of the intracranial membranes, extensive hemorrhages and lacerations of brain substance.

In more recent years more attention has been given to the pathologic study of the fetus and the newly born infant. At first the method of opening the cranium was the same as that used in the adult. This failed to reveal many of the lesions which were present, but not discovered. Beneke described a technic of opening the parietal bones which exposed the brain and membranes with a minimum of disturbance to the normal relations. A study of intracranial conditions in the fetus and newly born by this method shows the true picture and gives an accurate idea of the frequency and extent of intracranial trauma.

Vital statistics seem to show an increase in the mortality rate during early infancy due to birth trauma. This is probably not due to an actual increase in the relative or actual number of infant deaths due to traumatic causes so much as it is to the recognition of trauma as a cause of death and the diagnosis of intracranial injuries from the symptoms and findings.

Autopsy findings are often quite conclusive though there are borderline cases with passive congestion, petechial hemorrhages and edema where it is difficult to estimate the amount of damage done to the brain cells. One frequently hears of intracranial hemorrhage and while that is a perfectly correct expression of a definite finding I prefer to focus attention upon the trauma. It is the injury to the brain cells which is really of the greatest significance, but the most difficult to demonstrate.

The two best criteria we have for determining trauma to the brain are hemorrhage and laceration of the dural membranes.

Autopsies on stillborn and neonatal infants have given us much information relative to the character and frequency of these intracranial injuries and also with regard to the etiology and symptoms.

For a number of years past I have been interested in fetal autopsies, and the Department of Obstetrics and Gynecology ran a considerable series of about 1,000 at the Medical School of the University of Minnesota. These cases were secured from various hospitals and from private practitioners, and while the information was often incomplete the group probably represents a fair cross section of the results in the city at large. We have tabulated 961 cases and found that the largest single cause of death was birth trauma. Three hundred or 31.2 per cent of the deaths were assigned to this cause, and if the antepartum fetal deaths are excluded there remain 718 intrapartum and postpartum deaths, which raises the percentage of traumatic deaths to 41.8 among the fetuses which were alive at the onset of labor. It is only fair to remark that in 105 cases the evidence of birth trauma was not absolute and that 151 of the cases were previable or premature. If one considers the term cases alone there was a percentage incidence of definite and probable birth trauma of 39.7 and a definite diagnosis in 31 per cent. The oversized or postmature infants gave a somewhat higher incidence.

It is important to note that of the 300 cases assigned to birth trauma as the cause of death, such a clinical diagnosis was furnished in only four, and this cause appears on about 75 of the stillbirth certificates. It is of interest to observe that of 39 cases which were clinically diagnosed as asphyxia 22 were assigned to the birth trauma group as the result of findings at the autopsy.

Such factors as parity and type of pelvis undoubtedly influence the incidence of birth trauma, but our data on these factors are not conclusive. Induction of labor was done for various reasons in 120 cases. Thirty-eight of these fetuses died antepartum. Among the remainder there were only 31 in whom there was no evidence of trauma.

The time of rupture of the membranes seems to be a factor, and the incidence of birth trauma was highest where the membranes ruptured at the onset of labor (61.9) and during the first stage (46.0).

In 109 cases of placenta prævia and abruptio placentæ birth trauma was the probable cause of death in 31, or 28.5%, and suffocation and aspiration in 47 cases, or 43.1%.

The fetal position and the duration of labor are of undoubted importance. The occiput posterior positions show the highest percentage of cases with long labors. Intrapartum deaths also increase with the increased length of labor. The percentage incidence of traumatic deaths seems to increase with lengthened first and second stages of labor.

The incidence of fetal positions other than cephalic was relatively high, as there were 157 breech cases (17.9 per cent) and 24 cross presentations (2.7 per cent). The highest percentage of trauma was in the breech and transverse positions.

There is a definite relationship between the type of delivery and birth trauma as 26.0 per cent of the spontaneous deliveries, 47.3 per cent of those delivered by instruments and 58.9 per cent of breech extraction and version, showed birth trauma. Evidence of trauma was also found in a high percentage of those infants who were delivered by cesarean section.

The age of the fetus is unquestionably a factor in the production of birth trauma. The percentage incidence of injury is highest in the term and postmature groups, but is partially responsible for the death of a fourth of the previable and premature infants.

There are many factors, mostly mechanical, which are etiologic in the production of intracranial injury. The fetus itself presents many variations in maturity, size, shape, position as well as differences in skeletal and soft tissues which are contributory factors and for the most part not easily subjected to control. On the maternal side there are conditions which make induction of labor, terminations of labor, etc., necessary even though these procedures increase the hazard to the fetus. The mother may have toxic or diseased conditions which affect the fetus and make it more susceptible to injury. There are also certain other contributory factors of considerable importance which may not affect the maternal health. These include deformed pelvis, resistant soft parts, abnormal uterine contractions, either excessive or weak, the presence of neoplasms and various other less frequently occurring conditions.

The anatomy and structure of the bony pelvis and soft parts, as well as the structure of the fetal head, while mutually adjusted to permit of the passage of the fetus through the birth canal by the complicated mechanism of labor, are not designed to secure minimal risk to mother and infant. It would be easy to conceive of a much simpler mechanical arrangement if that were the only purpose to be accomplished by the human organism and there were no other functions to perform.

One of the simplest mechanical factors entering into the production of intracranial birth injuries is the variation in the pressure applied to the fetus in utero as compared with the more or less exposed portion of the presenting part, usually the head, which lies in the birth canal and is subjected to a different degree of pressure, especially subsequent to the rupture of the membrane, than the higher lying intrauterine portion of the fetus. It is the same mechanical principle which results in the edema and hemorrhage into the tissue of the presenting part. When the head is presenting, the same mechanical process operates on the intracranial structures and may lead to the occurrence of edema and even hemorrhages within the cranial cavity.

Another relatively simple mechanical principle which results in intracranial injury is seen in the short violent labors where the uterine contractions thrust the head into the parturient canal against the soft parts and

the bony pelvis with a violence which drives the fetus through the canal within a relatively short time. This type of case is not usually accompanied by head moulding, but is undoubtedly associated with alternating compression and decompression of the fetal head which results in marked changes within the cranial cavity which may provoke edema, hemorrhage and laceration of the dural membranes.

A similar mechanical phenomenon is sometimes associated with moulding of the head as the result of continued pressure, which is the sequence of uterine contractions which force a snugly fitting head into the birth canal. As a result of this adaptation of the head to the size of the parturient canal a similar condition results which is known as head moulding. Holland of England has studied this condition in a series of stillbirths, and considers it of very great importance. The fetal head is, of course, made up of the cranial bones, which are more or less movable on account of the open fontanelles and ununited sutures. Within the head we have the dural membranes and dural folds, of which the falx cerebri and tentorium cerebelli are of particular importance. In the falx there are certain fibres or bands which are distributed at various intervals throughout the falx, but tend to fuse at the point where the falx bifurcates and unites with the tentorium cerebelli. He has termed these fibres "stress bands." The head moulding results in the shortening of the anteroposterior diameter of the head in the occipito-frontal or occipito-bregmatic diameter, resulting in lengthening of the occipitomental diameter. This shortening of the head in one diameter and lengthening in another produces uneven tension on the falx which seems to culminate in the maximum force at or near the attachment of the falx to the tentorium. Closely identified in this region of the maximum stress is the vein of Galen and its tributaries. When the force applied results in an elongation of the head sufficient to tear the dural folds, the laceration is not infrequently located in this region and is associated with resultant hemorrhages from this vein or its tributaries. In other cases there is an actual tearing of the tentorium which may result in tentorial or subtentorial hemorrhage with increased intracranial pressure around the cerebellum and medulla. Of course, other injuries may be imparted to the head which result in petechial and other parenchymatous hemorrhages, bleeding into the ventricles, the cephalhematoma interna, and diffuse epidural hemorrhage.

Another mechanical factor of considerable importance in the production of intracranial injury is the depression of the occipital bone. One who notes the delivery of the head through the pelvic outlet frequently observes that the occipital bone occupies a lower level and is overriden by the parietal bones as it emerges under the pubic symphysis. This depression of the occipital bone may occur with cephalic, especially occipital presentations, where the occiput has rotated to an anterior position, as it usually does. This depression is produced by a resistance of the pelvic floor which maintains the head in flexion and crowds it under the pubic arch. Where the pelvic outlet is small with a relatively short anteroposterior diameter or where the perineum is unusually resistant, the head may be held under the pubic arch with unusual force, especially at the acme of labor pains. This force may in some cases be sufficient to at least contribute to intracranial damage. This depression of the occipital bone produces tenseness and traction on the falx and tentorium and may result in lacerations of these structures and of the blood vessels, which may cause hemorrhage as well as undoubted injury of the brain cells, which also occurs in all the mechanisms previously described and associated with marked alterations of intracranial pressure.

Injuries are also definitely associated with artificial delivery, though one must not forget that many of them occur in connection with spontaneous labors, usually those which are short and violent or those which are unduly prolonged in either the first or second stage, but more particularly in the latter. They occur in all varieties of cephalic position and presentation, but are naturally more common in those which tend to produce a harder and longer labor. They also occur in transverse positions, breech deliveries, versions and extractions. In transverse positions, which are usually terminated by version and extraction, the damage is usually done to the aftercoming head as it is drawn through the parturient canal. The same factor enters into the production of injuries in breech deliveries with extraction. Instrumental deliveries, while at times unnecessarily blamed for intracranial dam-

age which has antedated the application of forceps, are frequently productive of harm. As might be expected, the frequency and severity of intracranial damage in instrumental deliveries depends not only upon the skill of the operator but also upon the position and height of the head when the forceps application is made. Low forceps deliveries are productive of less intracranial damage than those where the head occupies the higher level. Lateral compression of the head in the biparietal diameter apparently does not cause as much damage as forceps application in other cephalic diameters. Instrumental deliveries are not infrequently associated with fractures of the cranial bones, which may be accompanied by lacerations of the dural membrane, edema and intracranial hemorrhage. Fracture of the cranial bones also follows extraction in breech deliveries and version.

The management of infants with intracranial trauma subsequent to birth is of considerable importance. It is essential to recognize that many of the so-called asphyxiated infants have circulatory and respiratory disturbances because of intracranial damage. Such damage as has already been done should not be aggravated by violent methods of resuscitation. The baby should be treated gently in attempts to establish the normal circulation and respiration. The clearing of the respiratory passages, the maintenance of body temperature, the stimulation of respiration, the supplying of oxygen and the use of various means of artificial respiration are all of importance. The various vigorous methods of artificial resuscitation should be abandoned and gentle means be established. The administration of the mixture of carbon dioxide and oxygen may be of definite value, but ordinarily the child seems to respond to the administration of oxygén in the early stages of the establishment of respiration. The treatment of intracranial damage is absolute quiet, the maintenance of fluids, the control of body temperature, the occasional administration of sedatives where the nervous system is irritable, the injection of whole citrated blood and the judicious use of spinal punctures.

The various types of injuries are depression and fracture of the cranial bones, with increased intracranial pressure, edema, hemorrhage and lacerations, cephalhematoma interna, hemorrhage from the blood vessels and sinuses, parenchymatous hemorrhages, ventricular hemorrhages, injuries of the dural membrane, especially the falx and tentorium, and damage to the brain substance.

The methods of prevention of brain injuries are: (1) Prenatal care by which attempts are made to bring the patient to term with the fetus in the proper position, and predetermining so far as possible the appropriate method of delivery. (2) Proper management during labor, with conservative conduct of the first stage, preservation of the membranes, the prevention of violent labors by the use of uterine sedatives and anesthetics if necessary, the avoidance of too prolonged pressure upon the fetal head in the birth canal or upon the perineum, the recognition of signs of fetal distress and the completion of the delivery when conditions are favorable. (3) Avoidance of undue occipital depression by its pressure against the pubic arch especially by vigorous attempts to protect the perineum. Also avoidance of delivering the aftercoming head in breech extraction and following version by using the occipital bone as the fulcrum of a lever in rotating and delivering the head over the perineum. (4) The restriction of the use of artificial means of delivery, to strict indications on the part of the mother or fetus when favorable conditions are present. (5) The selection of the proper time and method for artificial delivery and the use of good technic. (6) Lastly, the recognition of the fact that many of the infants which appear asphyxiated and do not breathe promptly or properly are in many instances traumatized and should be treated gently and not by strenuous attempts at stimulating respiration.

A FEW SKIN AND MUCOUS MEMBRANE LESIONS OF INTEREST TO GENERAL MEDICINE*

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Compared in age to medicine as a whole, dermatology is still an infant. I might add, however, that considering its age and growth curve, it must be considered precocious. Sired in conservatism by Willan a little more than a century ago, his death left no one of his school and teaching strong enough or convincing enough to firmly establish his principles. Hence, gloomy days fell on the art until the arrival of Hebra, nearly half a century later. Of course there were lesser rays of light between the two, but none of lasting significance.

The two names mentioned above are high lights of early dermatology, but Willan's influence was little felt outside of England. If he had carried more weight at the time, it is quite likely that the entire history of the specialty would have been altered.

With the coming of Hebra, we meet a man who is described as an "acute observer, a stupendous reader and an original thinker."[1] But with all his virtues, he lacked the power to correlate facts. He was a pure morphologist and his work marks the separation of dermatology as a specialty from medicine in general. What a pity Hebra and Willan were not contemporaries. Together they could have achieved far greater results.

With the infinite zeal which is characteristic of his type of mind, Hebra set about describing, classifying and naming the various dermatologic conditions which came under his observing eye. His virtue lies in the thoroughness with which he did his work, for he named a large portion of the conditions known today. His work constitutes the beginning point for all who would know something about the specialty.

The difficulty with Hebra's work is that he named conditions on a purely morphologic basis and from the standpoint of a pure morphologist. No attempt was made to correlate these conditions with the remainder of the body, and the result was an excessively heavy nomenclature seemingly without rhyme or reason and before which the average physician turns tail and runs. There are still those who attempt to ridicule the fine differential points in dermatology, but before they do so, let them remember that this work was done at a time when internal medicine had just gotten past the stage of watching the ants on an ant hill for evidence of glycosuria.

Since Hebra, much water has passed under the bridge but we are still far from the sea. His pupils and every thinking dermatologist since that time have been busy trying to correlate the things early described and named with the remainder of the organism. The tendency ever since has been toward a closer association with medicine as a whole and that tendency has never been stronger than it is today. We have come to realize that the skin is simply one of many organs and like any other organ it is subject to many influences. What influences the organism as a whole is likely to be reflected in the skin and, in addition, there are many purely external causes of dermatoses. The person who insists on being a pure externist as regards the etiology of dermatologic lesions is just as far wrong as the person who insists upon an internal origin for them. There is a proper middle ground and the ability to recognize which are likely to be external and which internal depends upon long training and acute observation.

Let me illustrate the modern attempt to correlate the old cumbersome names in dermatology with internal medicine. About 1868 Hebra described pityriasis rubra. The name means only red scaling, is purely externally descriptive and gives no clue as to the possible cause. From the description of the early cases they might fit into our conception of any severe exfoliative dermatitis. But we have learned that exfoliative der-

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matitis may be due to many causes, and it is a sign and a symptom rather than a disease. It may be caused by external factors such as the local application of chemical irritants, by the injection or ingestion of various drugs, it may be the end-result of a preëxisting dermatosis, or it may be the first sign of a cellular malignancy of the lymphoblastoma group. To make such a diagnosis and walk proudly off at the present time is like throwing a life preserver loaded with lead to a drowning man. It simply isn't done.

Recently the available cases of so-called pityriasis rubra have been reviewed by Barney[2] and practically all of them have been shown to be associated with grave medical conditions and a large portion of them specifically manifestations of the lymphoblastoma group. It is the response of the skin to a generally injured organism.

For some unknown reason, we in Ann Arbor have been privileged to observe a large number of the lymphoblastomas, including leukemia cutis, lymphosarcoma, granuloma fungoides and Hodgkin's Disease, beginning as far as we can tell with changes in the skin. This group as a whole can produce practically all known dermatologic lesions, but the one manifestation of which we are continuously suspicious is a severe exfoliative dermatitis, for which we can find no other etiology and which does not clear up promptly under bland local therapy. These changes often appear in the skin long before they can be demonstrated in the blood stream or lymph nodes and we have had many cases under observation, diagnosed by clinical and biopsy findings, a period of years before they developed the typical findings of the group from the medical standpoint. And our experience with autopsy material has taught us not to be too sure from the clinical picture just what the postmortem findings will be. Clinically these conditions present fairly typical pictures, but in the light of our present knowledge we are not at all surprised to have a competent pathologist report the findings of lymphosarcoma in a postmortem specimen who as a patient was characteristically labelled granuloma fungoides. The interesting point is that fifty years ago most of these cases would have been called pityriasis rubra with little thought of the underlying general condition. Today they are definitely hooked up with conditions usually considered the realm of the internist.

But dermatologists have no corner on the naming of so-called disease entities and some others have done about as badly. Shortly before Hebra described and named pityriasis rubra, Moeller described and named a glossitis which has since been called by his name. The original description consisted of six cases, all in women, of excessively painful and burning tongues. Clinically they presented slightly varying pictures of persistent exfoliative plaques on the tongue. The one symptom common to all was excessive burning and none recovered. Harris[3] in 1915 reviewed the available cases of this condition and reports that five of the six original cases were infected with bothriocephalus latus, and I have always been curious to know if Moeller's glossitis in 1851 might not grow up to be a full blown pernicious anemia in 1931. Certainly Moeller's glossitis, if such an entity exists, is a rare bird at the present time although sore and burning tongue is fairly common.

The easily visible mucosæ are usually considered the legitimate field of the dermatologist and certainly he has done much to advance the knowledge of mucous membrane lesions. For this reason he is commonly called upon to make such diagnoses and many of the conditions are interesting. Some are purely local, some annoying to the patient but of no general significance, while others are direct manifestations of grave medical conditions.

Because of the recent cancer campaigns, we are called upon more and more for advice regarding purely harmless conditions which the patient never noticed until he began looking for cancer. Included in this group are Fordyce disease, scrotal tongue, hairy tongue and enlarged papillæ at the junction of the middle and posterior thirds. For the most part reassurance only is necessary in these cases.

The angiomas occurring in and around the buccal mucous membrane are annoying and disfiguring but seldom, except from the cosmetic standpoint, of grave medical importance to the patient. The one exception to this is the case of the small infant where the lesion interferes with feeding. Fortunately, practically all of these respond readily to roentgen and radium therapy and the time of application can usually be made a matter of choice.

Of the infectious processes occurring in

and around the buccal mucous membranes syphilis, tuberculosis and actinomycosis deserve special attention.

We have seen actinomycosis limited to the tongue in the form of a deeply seated nodule, but this is not the common picture. The portal of entry is usually around the teeth and by the time the patient seeks help he has a fairly characteristic swelling of purplish red color in the region of the angle of the jaw and in the submaxillary region. Usually there are a number of draining sinuses externally to the skin and for this reason it may, superficially at least, resemble rather closely glandular tuberculosis. The diagnosis is rather easily established by finding the ray fungus in the fresh pus or in the stained specimen.

Tuberculosis of this region I mention at this time only to emphasize that it is practically always the result of more deeply seated tuberculosis which is usually advanced and hence carries a poor prognosis. The subject of tuberculosis of the skin and mucous membranes will be taken up in detail by Dr. Keim this afternoon.

Syphilis as it occurs in and around the oral cavity permits a study of practically all known syphilitic lesions. The tongue, lips and tonsils are the common sites for extragenital chancres, with a few on the chin, eyelid, nipple and finger thrown in for good measure. Regardless of their location, they usually retain their characteristics of painlessness, firm induration and early development of the satellite bubo. These extragenital primaries, however, are prone to develop to giant size and, unless they are kept constantly in mind, they will be missed.

Secondary syphilitic lesions of this region may be simple erosions, papulo-erosive, or they may be actually destructive as the analogue of the deeply seated pustular lesion of the glabrous skin. Confluence is not the rule in secondary syphilis, but even this is seen around the mouth and, more particularly, in the case of the newborn infant representing a congenital type probably acquired late in utero.

Tertiary syphilitic lesions in and around the mouth may be single or multiple. On the lip or the tongue the single gumma may closely simulate the chancre or cancer and at times a considerable diagnostic acumen is necessary to distinguish between them. On the face and away from the mucous membranes, the late lesions commonly take on the typical nodulo-ulcerative characteristics with active confluence of nodules at the border, a clearing center and a fairly definite crescentic or serpigenous outline. It would pay you real dividends to get acquainted with this type of lesion.

In addition to the single gumma, the tongue may present two other types of late syphilitic involvement. As the result of the healing of multiple gummas, it may be extremely firm and deeply furrowed. Ordinarily it is paler than normal and when compared with the scrotal tongue it is found to be distinctly firmer. Because of increased size and stiffness it may even lack some mobility. This condition is commonly spoken of as interstitial glossitis and is fairly pathognomonic. Further, the surface may be distinctly smooth and atrophic although the whole tongue is increased in thickness. This represents the smooth atrophy of late lues and is regularly simulated only by pernicious anemia.

Of the premalignant lesions in and around the mouth, leukoplakia is the most common although keratoses develop at times on the vermilion border. Both are forerunners of trouble and if they show the slightest evidence of degeneration should be thoroughly destroyed. Cancer developing in this area is practically always of the squamous cell variety and hence half way measures should not be tolerated.

Cancer of the tongue and buccal mucous membrane commonly develops on the basis of leukoplakia although this is not necessarily true. In turn leukoplakia may result from many things, but the chief one is chronic irritation of some sort. Rough and carious teeth should be repaired and all other forms of irritation avoided. It is here interesting to note that we[4] have found 30 per cent of our cases of carcinoma of the tongue associated with syphilis and hence would warn against ruling out malignancy on the basis of a positive blood test. In our experience gumma of the mucous membrane of the oral cavity provides a fertile soil for the production of cancer. They are commonly associated.

Before leaving the oral cavity there is one symptom which I wish to consider further. It is that of sore tongue. I remarked awhile ago that the easily visible mucosæ are commonly considered the legitimate field of the dermatologist and hence many complaints of this sort come to him or are referred to him.

There are many external and traumatic causes for this complaint, but I do not wish to consider them at this time. There are two types that I do wish to call to your attention. The first of these is the type associated with pernicious anemia and the complaint is commonly excessive burning. Examination reveals a tongue which is paler than normal and presenting a smooth atrophy similar to that seen in late lues but not as firm as the latter. Further history often elicits the presence of slight parasthesias and the combination often leads to the proper diagnosis long before the advanced changes occur. From this standpoint it is important not to pass up a complaint of sore tongue until we are reasonably sure it is not a manifestation of a grave medical condition.

Compare, please, with the picture just mentioned a much more common and less serious condition known as glossitis marginalis erosivum. The name correctly describes the lesions, as they are usually marginal erosions rather more brightly red than normal and surrounded by an ivory white border. The tongue is sore, but if we happen to know the other name for this condition (benign transitory plaques) we also know that they will not last. The lesions are rapidly migratory in character and in this respect differ from the lesions of secondary syphilis. This condition is practically always associated with gastro-intestinal disturbance and, if the underlying medical condition is not corrected, they will most certainly recur.

Let us consider now for a few moments the deficiency diseases with dermatological lesions which we meet in Michigan, and if you have not thought of them in this light before the list is somewhat surprising. It includes pellagra, acrodynia, scurvy, myxedema, Addison's syndrome and diabetes as the most important. Nearly all have outstanding dermatological aspects from which the diagnosis can be made with very little help.

Pellagra we used to consider a disease of southern institutions, but this is no longer true. It has become fairly common in Michigan and we see about a dozen cases each year at the University Hospital. The features of all are so nearly the same that the diagnosis becomes easy after a few cases have been seen. The outstanding features are the dermatitis and pigmentation limited to the exposed surfaces. On the hands and feet this is confined to the dorsa and partakes of the glove and stocking distribution. The buccal mucosæ and tongue are brilliantly red and commonly described as beefy, and if one needs further evidence he will find it in the diarrhea, mental symptoms and cord changes which go along with the advanced case. If, however, one is aware of its existence and the dermatological lesions which ordinarily are fairly early manifestations, it may be recognized and treated before it is hopeless.

Acrodynia or pink disease is considered by many a disease of the infant analogous to pellagra in the adult. This is by no means proved as yet. It is another fairly recently recognized disease, the signs and symptoms of which are characteristic. Beginning with an irritability, the infant soon develops a marked redness of the palms and soles which later may become a generalized eruption. Accompanying this there is a marked photophobia and when exposed to light the child assumes a characteristic burrowing attitude, burying its head in the pillow to escape. The prognosis is not good.

For those who would liken this condition to pellagra, it should be pointed out that the dermatitis in acrodynia begins on the palms and soles whereas in pellagra it practically never involves these areas. Further, in acrodynia the dermatitis may rapidly become generalized, while in pellagra it is confined to the exposed surfaces. True there are some points of likeness, but the relation is not established.

In these enlightened days scurvy is somewhat a rarity, although it is occasionally seen. Those cases which have come to my attention have been associated with prolonged feeding with a certain brand of condensed milk. Advanced cases are usually easy of diagnosis, presenting spongy and bleeding gums, marked irritability, painful joint movement and at times large subcutaneous hemorrhages. X-ray of the joints and long bones is of distinct help and indeed occasional obscure cases can be diagnosed only with its help.

Myxedema, a type of thyroid deficiency, also presents fairly characteristic changes in the skin and its appendages. While the skin as a whole is thickened due to deep changes, there is no pitting edema. Because of this thickening, the facial lines are smoothed out and the skin is dry and in-

elastic. In addition, the hair is sparse and coarse. If we add to this the obvious mental retardation and the lowered basal metabolic rate, the diagnosis should be fairly obvious.

I speak of Addison's syndrome in this manner rather than Addison's disease because the original cases were due to tuberculosis of the adrenal only. The concept has now been broadened to include various types of adrenal deficiency and the originally described disease is only one of them. This patient usually comes to the internist because of his weakness and loss of weight, but he also presents fairly characteristic skin and mucous membrane changes. These consist of a varying degree of brown pigmentation early distributed in a zonal band about the waist line. The axillæ and groins are also early involved and a little later the buccal mucous membrane. The early pigment is distinctly brown but before death may progress to almost black.

Diabetes mellitus, of course, is due to partial pancreatic insufficiency and there are many associated dermatological lesions. Most common are furuncles, carbuncles and, in the elderly particularly, distal gangrene. We also see perforating ulcers over points of pressure which cannot be distinguished clinically from those seen in tabes dorsalis. Indeed the underlying pathology may be exactly the same for the cord changes are like those of the tabes of late lues. Occasionally we meet the rare bronze diabetic with his brown to slate gray color and enlarged liver. Usually, however, this patient is sick and he is recognized as a diabetic by the internist long before he is seen by the dermatologist. These enumerated lesions are so constantly associated with diabetes that anyone passing them up without a reasonable investigation is at the very least guilty of poor judgment.

The physician, himself, is occasionally to blame for the production of skin lesions. No drug was ever produced or ever will be produced to which some patients will not react abnormally. This becomes a question of idiosyncrasy or susceptibility on the part of the individual patient, but if we are to administer drugs we should know something about the type of reaction to expect. The most frequent offenders of a large list in our experience are iodides, bromides, luminal and phenolphthalein.

The most common eruption due to both iodides and bromides is one resembling simple acne vulgaris. The lesions may be a little larger and a little more indolent, but in this form it has no great significance. It should serve as a warning. Continued administration, or if the patient is especially susceptible, may produce serious results Fungating, purplish nodules of wide distribution or a bullous pemphigoid eruption may be produced by the iodides. In the case of the bromides the verrucous, inflammatory, excessively painful eruption peculiarly confined to the anterior surfaces of the tibiæ is characteristic.

Luminal produces a morbiliform type of eruption of a highly pruritic nature and it occurs fairly frequently in the incidence of its administration. No serious late effects have been noted but the patient is uncomfortable for the time being.

Phenolphthalein, which is a common constituent of cathartics now in use, fortunately produces an eruption but rarely. It begins with an itching and burning and carries on with the production of large red macules which ultimately involute leaving a dark brownish black pigment. This pigment is relatively permanent and the old lesions flare up with each new administration of the drug. Once seen it is easily recognized, but if not kept in mind it may cause considerable discomfort both from the standpoint of the cosmetic effect and physical suffering.

I realize that I have not covered the field. I have tried to show you a few of the interesting lesions which we commonly meet and most of which have some interest in general medicine. I have tried to show that after all dermatology is not so far separated from general medicine and I might predict that when the difficulties of biochemistry have been overcome and when we have a better understanding of endocrinology and metabolism, they will be found closer together than we now admit.

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BEHAVIOR PROBLEMS IN CHILDREN*

PRACTICAL CONSIDERATION OF THEIR ANALYSIS AND TREATMENT IN PRACTICE

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The present status of Mental Hygiene and Child Guidance was convincingly expressed by Dr. Bronson Crothers[1] in a discussion of a paper at the Eighty-Second Annual Session of the American Medical Association. In preface to the consideration of behavior problems in everyday practice, I wish to present the following excerpts from that discussion:

"One who settles down to a study of the psychiatric and mental hygiene literature of the last twenty years finds two sorts of articles: For specialists in mental disease there is a large scientific literature, much of it highly controversial and relatively little of it very definite. This controversial and inconclusive status is obviously correct. . . . The lay and the general medical public is furnished a different intellectual fare. A genuine effort is being made to formulate statements which will convey to all intelligent people a fair impression of the present assets of the modern science of psychiatry. This effort is clearly sound. It is possible, however, to quarrel with certain efforts to arouse general interest in the whole subject. . . . The general practitioner is admittedly a necessary element in an efficient mental hygiene program. His present lot is not a happy one. He is told what is expected from him as to results but given little information as to procedure. . . . Much has been written which suggests that the field of mental hygiene is relatively unoccupied. This idea seems to me of doubtful validity. I should think it was over-crowded. It is admittedly difficult to classify and appraise the people who are giving advice. Psychiatrists, psychologists, progressive teachers, educators of parents, informal and formal child guidance organizations are in the field already. It is, however, perfectly clear that the very confusion which now exists furnishes the best of reasons for active and persistent interest by the general practitioner. . . . I am convinced that there is such a thing as "psychiatric intelligence," in the phrase of Dr. Esther Richards, which can be developed by general practitioners. . . . The eager and intelligent physician may find ways of selecting information and attitudes which, for him, are more effective than those chosen for him. In any case a hopeful, interesting and profitable field of effort is open to the practitioner."

I present this because I believe it to be a well-stated, unbiased, conservative evaluation of the mental hygiene and child guidance movement. In addition to thinking that "psychiatric intelligence"[2] can be developed by general practitioners, I believe that the successful physician who has mastered the great art of the practice of medicine has psychiatric intelligence in balance proportionate to his success as a physician, not necessarily in terms of income, but in treatment results.

Behavior, whether it is that which is considered normal or in other words acceptable to society as a whole, or whether it is abnormal or objectionable to the majority, is the reaction of the individual member of society according to the "sum-total" of his experiences. This reaction, according to predominance of certain factors in his physical, mental or emotional experience, assumes a certain pattern for each individual. This pattern is made up of various reactions or symptomatic behavior. According to the predominance of certain symptoms of behavior or the pattern which occurs most often, some mechanism indicating a disturbed affective or feeling state is manifested.[3]

In dealing with behavior problems in children, mechanisms are of value in considering the personalities of the adults associated with the child. A child is largely what he is because of the personalities or behavior patterns of the adults in association with whom he has been receiving his life experiences.[4, 5] It follows, then, that in addition to treating the child, and more important, it is necessary to treat the parents or other adults responsible for the child's maladjustments. This can be done only by knowing the why and wherefore of the primary mechanisms of the adult behavior which is responsible for the personality of the child.[5, 6]

Many intelligent parents are able to analyze this why and wherefore of their own personalities without the aid of a physician or mental hygienist, not necessarily in psychological terms, but in common sense reasoning. More important, they are able to readjust their own attitudes toward society and their child, so that the manifested undesirable behavior is replaced by desirable behavior.

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Probably most physicians find few such parents among their clientele. Pediatricians particularly occasionally see such parents. There is a fairly large group, perhaps three-fifths of all the parents seen in pediatric practice, who, with a timely warning and frequent reassurance, can find and refind themselves and make adjustments which result in a desirable personality in their child. A smaller group consists of parents who are conflicted to the extent that they are capable of little or no insight. They will need some degree of psychiatric management by either the family physician or a psychiatrist. They and their children will need repeated contacts by trained individuals for proper suggestion, recreational or vocational guidance and companionship. It may even be necessary to place the child out of the home into a suitable environment to facilitate a healthy readjustment.

Our first step as physicians in approach to handling behavior problems or maladjustments in our patients should be to look into our own lives and try to fathom the complexity of our own personalities.[7] This is necessary in order that we shall not identify ourselves with the patient or members of his environment and be biased in our analysis of the causative factors of the faulty behavior.

Our next step is to realize that no two individuals are alike. Each one is born with somewhat different potentialities for personality development. Each personality is dependent upon the physical endowment at birth and at any stage of life is the result or "sum-total" of physical, mental and emotional experiences. The behavior of the individual will reflect the habit conditioning which he has acquired in response to these past experiences.[8] Most of these experiences are obtained in the immediate environment of his existence, and in treatment, the consideration of the personalities and attitudes of the members of this immediate environment and the needs and drives behind them[4, 5] is of primary importance in achievement of alteration of the personality pattern of the patient.

Our third realization should be that in everyday practice such readjustments are repeatedly being facilitated by the successful practitioner. Some cases are sufficiently complicated that for successful treatment they require the services of those especially trained for this work. It is our duty to the patient, his family and society as a whole to see that the best advice and management available are obtained for him.

Prevention is one of the greatest functions of the physician in consideration of behavior problems. The physician who is interested in the human side of practice will make an effort to know his patients sufficiently well that it will be possible for him to suspect existing family disharmonies and give advice in such a way as to allow the parents no excuse for faulty management of their child. In order to do this he should endeavor to gain some knowledge about the cultural patterns, attitudes toward accomplishments or disappointments in life, attitudes toward marital or social pleasures or disharmonies, and the drives or inadequacies of the parents.[5] The physician by having some idea about these things can anticipate what will be the attitude of parents toward each other and toward the child. With this information he can shape his professional advice so as to give as little opportunity as possible for the parents to hinder the adjustment of the child by bringing their own personality difficulties and problems into his management. This is the ideal, but unfortunately neither practicable in all cases nor by all physicians.

Some such analysis, however, is essential for successful treatment in any case.[5] This must be done discreetly. An intelligent parent may be able to make readjustments without further difficulty if the faulty factors in the cultural pattern of his own development, or other possible etiology for his needs and drives, are pointed out to him, and he can be brought to realize the possible causes for his faulty attitude toward the child. However, some individuals need constant attention with an effort toward directing the needs and drives of their maladjustment into other channels away from or less injurious to the child. Unless this is done, more serious difficulties may result because of the inability of the parents, through their very maladjustment, to accept the advice given.[4, 5]

The attitudes toward the child of the parents and other members of his environment are of paramount importance. The attempts of family physicians or pediatricians to direct satisfaction of the needs and drives of adults away from the child, would be simplified if it were not for the advice which is being promiscuously disseminated by individuals, many of whom are neither quali-

fied nor sincere in their efforts. In fact, if it were not for the strife of pseudoscientific individuals for popular public acclaim through sensational propaganda, and the unreliable "health" advertising of commercial organizations, much of the shifting foundation for over-anxiety about children would be obviated.[9]

The child welfare movement which originated in France in the Nineteenth Century, largely through the efforts of lay organizations because of a fear of depletion of European population, has served its purpose well and has become a sort of Twentieth Century science. It has brought civilization from an attitude of grave censure of race suicide through abortion and negligent infanticide, to one of such enthusiasm about birth control that if an intelligent wife has an accidental pregnancy she suffers from guilt-feelings about being psychologically inferior to her cultural standards. This is only one factor which may contribute to the frequent rejection of children by their parents.[15] This rejection may result in compensatory attitudes of over-anxiety because of feelings of guilt, and cause faulty behavior to develop.

All of the attention which has been focused upon the welfare of the child has had noticeable effect. Standards for normal have been established from statistical data collected from measurements of large groups of unselected children. Standards for physical development, psychological development, hygiene, nutrition and behavior have been erroneously accepted. An attempt has been made to fit a given child at any week of his life into a pigeon hole according to a stanadrd for accomplishments. Pediatrics as a specialty assumed more importance with growth of this movement, and a definite daily, or in some instances hourly, routine for handling and feeding infants and children became inviolate with many physicians.[9] I have seen eight typewritten pages of specific routine which was outlined by a California pediatrician for a child who was taken to him for a health examination and found to be slightly under the average weight for her age. Fortunately the mother had more common sense psychology than the physician. Realizing that her child was otherwise healthy and well adjusted she selected the advice about rest and spacing of meals, which seemed reasonable, and continued the successful meal-time psychology which she had been following. The mother foresaw that if this child was forced into following the routine for a specific menu each meal, regardless of whether or not she had an appetite for it, she would eventually revolt at this type of nagging, which had been avoided thus far in her management.

All of this attention to the child has probably resulted in better health and a physique which will permit of the greater intellectual accomplishments demanded in our modern schools. There has been another result which was not anticipated and which is not fully recognized at the present time.[9, 10] This focus of attention upon the welfare of the child has given new and different opportunities for manifestation of the needs and drives or compensations of maladjusted adults. The parent or other adult responsible for the child has ample outlet for expression of his own maladjustments in anxiety about the development, health and behavior of the child. Although not so bizarre as the hysteria of a few years ago, the symptoms are just as significant and the effect upon the personality of the child is pronounced.

Much is continually being said about the inferiority feelings which develop in an individual as a direct expression of his feelings of incapacity because of a physical abnormality. This may be true in rationalizing adults. I wish to emphasize the effect of the social attitude about so-called physical handicaps, upon the personalities of the possessors. The abnormality in itself is not the greatest handicap. The emotional conflicts which result because of parental or social attitudes regarding these abnormalities are of most importance. A person who is constantly hearing some kind of reference to his abnormality or who is constantly having things done for him which he is capable of doing with some degree of efficiency himself, will either show a quite natural reaction, revolt, or he will take advantage of the situation to get unhealthy recognition because of his physical handicap. Constant attention to a handicap, whether it be in the form of nicknames relating to it, or whether it be in the form of sympathy or special privileges because of it, will usually become a type of nagging in the interpretation and emotional response of the afflicted. Children with speech difficulties may withdraw because of revolt at being unable to make themselves understood. The cripple may withdraw because of revolt at being unable

to exert his ego in play competition with normal children. The child who has undetected faulty vision or color blindness, or the child who unknowingly does not hear well may withdraw because his sincere attempts in his best possible accomplishments are looked upon by the teacher or parents as lack of effort. The other most common reactions in such cases are regression, or temper tantrums and fighting.

A child has an ability for interpretation of the attitudes of members of his environment. This is very keen in infancy; the baby gurgles, cries or screams in response to it for the purpose of self preservation. This sense is gradually dulled as our emotional experiences become more complex throughout childhood and adolescence. This dulling saves us much grief from knowing the reactions of every member of society toward us. It is, however, less dulled in some individuals than in others. Because of this more keen intuitive sense the child is likely to unconsciously understand attitudes toward him which the parent is unaware of possessing.

The approach to analysis and treatment of a behavior problem need be no different from the successful handling of any medical problem. The physical examination and history have comparatively the same value to the physician as they have in the successful diagnosis and treatment of other conditions. From the standpoint of treatment and prognosis, our approach to the analysis of a behavior problem necessitates more interest in the intelligence of the patient and parents and the various aspects of the environment than would be observed in dealing simply with organic disease. Analysis and treatment both begin at the first contact with either the patient or the parents. The physical examination should be complete in every detail. It should be done in good light with all clothes removed and preferably with no other person, except an attendant, in the examing room. It should include a close inspection for physical abnormalities or gross dysfunctions. The common measurements should be taken for present and future check on the development and nutrition of the body. Careful search should be made for foci of infection, evidences of chronic toxemia or signs of glandular dysfunction. The temperature, pulse rate and blood pressure should be taken and evaluated according to the physical findings. A routine examination to determine the acuity of vision and hearing and the color vision is essential. A determination of whether the child is dominantly right or left handed or right or left footed, and a check on the strength of the two hands with a simple dynamometer should be made, and information obtained regarding home or school training. A careful routine neurological examination including inspection of the fundi should be done. All of the findings must be evaluated in the light of the general appearance and reactions of the child.

A simple psychiatric study may be made during the examination.[11] The reactions of the patient to questions about himself, certain parts of his body, sex, his family, school, recreation and ambitions can be obtained. The examiner can get a rough estimate of the intellectual capacity of the patient according to his responses to general questions, and his ability to carry out the instructions given for routine procedures in the physical examination.[12] An opinion should not be ventured, however, without consideration of the effect of emotional conflicts which might be present. His attitudes can later be observed in the presence of the parents. If definite determination of intellectual ability is advisable, it can be arranged for with a psychologist.

The history is of the same importance as that taken for purely organic disease except for two considerations. In dealing with certain types of behavior problems such as habit spasms, headaches, fainting spells, etc., it is more necessary to have definite information about previous symptoms of possible central nervous diseases. The other consideration is that the procedure of history taking permits of a thorough analysis of the emotional trends of the parents and an evaluation of their needs and drives in relation to the patient. This information need be obtained by no other method than that of ordinary successful medical procedure. It is not necessary to ask specific questions for all of the various information desired. Neither is it necessary to state specific advice in treatment. The most effective analysis and treatment is often by unconscious procedure. Under the heading of *chief complaints* the behavior symptoms complained of may be obtained along with the physical complaints. The development of these complaints may be reviewed under *present illness* according to the recollection of the parents. Behavior

symptoms are often associated with physical symptoms and a combined story of their development is convenient for interpretation. Information about *past illnesses* will not only give possible clues to some physical finding, but inquiry may bring out the emotional reactions of the patient, the parents or others about these illnesses, and will aid in formation of an opinion regarding the maladjustments of these individuals. The *birth history* is very important. Information about the conception and pregnancies as regards the existence of significant diseases in the parents may also show the marital adjustment of the parents[5] and their attitudes toward the birth. This will not necessarily signify the acceptance or rejection of the patient. The information may suggest factors in the cultural patterns and attitudes of the parents which are being expressed in their management of the child with undesirable effect upon his personality. A careful analysis of abnormal symptoms in the mother during pregnancy and a detailed account of the labor, birth and condition of the baby when delivered, are of additional importance in determination of the primary physical endowments of the patient at birth. Information about the development, management and training during infancy and early childhood will give a clearer picture of the parents and permit of a better analysis of the mechanisms of their behavior toward the child. The *family history* should not only be directed toward obtaining evidence about existing familial or hereditary traits, but should contain such information about various life experiences of the parents as appears to be necessary to determine their needs and drives which have resulted in the behavior of the patient. It must be kept in mind that personality material obtained in this way may be colored by the trends in the persons giving it and must be interpreted in the light of what is known about them.

A temporary plan of procedure for further analysis and treatment may be formulated after a provisional opinion is gained from the facts regarding the physical, psychological and emotional material at hand. Additional procedures indicated by the physical findings may be carried out. Special tests for color vision and handedness or special investigations or training in reading ability may be arranged for. Attention to physical factors with some suggestion as to the management may be sufficient to facilitate an adequate readjustment. On the other hand, the parents may be so conflicted or protective and their emotional trends so deep-seated that the necessary analysis or treatment may not be possible by simple methods. It may be necessary to enlist the services of one especially trained in the technic of handling such cases in order to effect a satisfactory readjustment.

Family relationships are important in handling any medical case in practice. They are of paramount importance in the etiology and treatment of child behavior problems.[4, 5] Successful treatment may be conducted upon a purely superficial level in some cases. Every case is individual, however, and deserves the individual analysis accorded other illnesses. The scientific and most successful handling of these cases includes an attempt to get at the underlying causes for the symptoms in the beginning. With a knowledge of the important cause-and-effect relationships in human behavior and an analytical interpretation of significant trends appearing, the family physician or pediatrician may be able to effect a very successful prophylaxis through his usual periodic contacts with the family. Developing behavior problems can usually be handled very simply in their incipiency by giving the parents some insight into the causative factors of their development. Complex problems which are usually manifested by multiple symptoms of behavior, should be approached with the caution which characterizes the prudent procedure in handling any complex medical problem. They are the result of a certain pattern of conditioning throughout the life of the patient and may be varied and complex. It should not be expected that a complete analysis can be made in one or two brief interviews any more than a complete diagnosis and prognosis can be given from a similar amount of study in a case of tuberculosis, cardiovascular-renal disease, hyperthyroidism or diabetes. In fact, it may be necessary to rule out an acute or chronic disease condition as etiology for the behavior symptoms. The completion of the necessary physical examination, history and laboratory studies may give reason for several contacts with the family and the patient. During this time a temporary or initial procedure for medical management will have been instituted depending upon the indication of the physical findings. Such a procedure will permit of a deeper analysis of all

of the cause-and-effect relationships, with progress being made from the first contact. If the parental maladjustments are too complex and deep-seated to be handled by the general methods of the pediatrician or general practitioner, the case should be referred to a competent consultant psychiatrist or clinic.

Because of the "controversial and inconclusive status" of the psychiatric and mental hygiene literature, most of which is couched in hazy, newly-manufactured terminology, it has maintained an atmosphere of mysticism, and its exponents have labored under the ban of cultism. Because of this complex, hazy terminology, which is probably to some degree compensation for insecurity from lack of scientific basis for some of its highly theoretical philosophies, most physicians have stood in awe of it, feeling inadequate to master something scientifically beyond their sphere. They have not realized that its very controversial and complex nature is evidence of some lack of scientific foundation in fact. They have not realized that an understanding of the human personality, which is the object of the mental hygiene and psychiatric literature, is the keystone of successful medical practice.

A more scientific analytical understanding by physicians of the mechanisms of personality development is a step forward in medical progress. It is a means to simplification of the art of medical practice. A summary of the psychological and psycho-analytic theories of Sigmund Freud, Alfred Adler and C. G. Jung is given by Dr. Beatrice M. Hinkle[3] in her introduction to "The Recreating of the Individual." J. C. Flügel[6] vividly presents the psycho-analytic interpretations of various family relationships. Porter R. Lee and Dr. Marion Kenworthy[5] emphasize the importance of "cause-and-effect relationships" in analysis and treatment of behavior problems, and give striking illustrations of their significance. These relationships are more specifically shown by detailed analysis and interpretation of selected case histories by Maud E. Watson.[13] More or less superficial considerations of the development of behavior symptoms and the management of children may be found in the various books on child guidance and behavior problems in children.

As physicians we are interested primarily in the welfare of our patient as a whole. This implies a consideration of his personality adjustments and mental health as well as his physical well-being. Those of us who confine our practice to infants and children know the variety of complaints of parents about their children and the physical abnormalities in our patients which have their origin in faulty parent-child relationships. We also know the difficulties which we meet in trying to cope with them. The approach to their better understanding lies in an attempt to discover the maladjustments of the adults who are in faulty relation with the child.

In conclusion to the consideration of behavior problems in everyday practice, no better remarks could be used than those of Dr. Borden S. Veeder:[14]

"The pediatrician and the general practitioner have been slow to widen their field, to look on the child as a whole, to recognize that normal development implies the mental as well as the physical, and to recognize that personality difficulties may make an individual as much of an invalid as physical illness. . . . The only person I know who comes into close contact with young children and has the opportunity of seeing and foreseeing the concrete individual problem is the pediatrician and general practitioner. I cannot see any other way out than for him to take on the added function of forestalling abnormal mental development and habits in the same way that he tries to prevent faulty physical development. This implies, of course, a knowledge of the essentials in this field."

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INTESTINAL OBSTRUCTION

A REVIEW OF NINETY-FIVE CASES

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Voluminous literature related to the various phases of the problem of intestinal obstruction exists. The condition has been studied by many observers from many angles. Certain factors have been established and are recognized. A high mortality prevails. The quest of surgeon and internist is to reduce this mortality. Reviewing the records of a hospital and profiting by the findings will aid in the attainment of this end.

The material for the present study was taken from the files of the History Library of Butterworth Hospital, Grand Rapids, Michigan. It includes 95 cases of intestinal obstruction that occurred during the five year period from 1926 to 1930. These were cases with a definite diagnosis of intestinal obstruction during this period.

These have been studied as to: (1) age incidence, (2) sex incidence, (3) type, (4) result, (5) cause of obstruction, (6) number of operators, (7) symptom duration, (8) type of operative procedure. Because of the large incidence of adhesions as a cause of obstruction this series of cases was more minutely considered.

Age incidence. The age incidence of the 95 cases reported may be summarized as follows:

Age in years	No. of cases
0- 5	7
6-10	1
11-20	6
21-30	17
31-40	19
41-50	11
51-60	15
61-70	15
71-80	4

The ages from 21 to 40 years and from 51 to 70 years present the greatest incidence.

Sex incidence. There were 53 female and 42 male patients in this series.

Type. Dividing the cases of this series into partial and complete obstructions we tabulate 42 partial and 53 complete obstructions.

Result. Of the 95 cases reported 45 died in the hospital and 50 recovered, a mortality of 46.2 per cent. The mortality for the cases of partial obstruction was 31 per cent and for the cases of complete obstruction was 60.4 per cent.

Cause of obstruction. The immediate causes of obstruction have been summarized and recovery and death noted as follows:

Cause	No. Cases	Recovered	Died
Adhesions	56	35	21
Carcinoma	9	6	3
Hernia	7	2	5
Intussusception	7	4	3
Paralytic Ileus	5	0	5
Volvulus	4	1	3
Gallstones	2	0	2
Enterolith	1	1	0
Endometriosis	1	0	1
Congenital atresia	1	0	1
Undiagnosed	2	1	1

Adhesions in the abdomen was the cause of obstruction in 59 per cent of the cases. The fact that post-operative adhesions were responsible in a majority of the cases has prompted a closer examination. The summary appears later in the course of this article.

Number of operators. Of the 95 cases reported 93 were operated upon. There were 28 operators into whose hands the 93 cases came. Findings in regard to the number of cases operated by each and the respective mortalities of these operators are summarized in the following:

Operators	Cases operated	Recovered	Died
1	15	8	7
1	9	8	1
1	9	5	4
1	7	2	5
1	6	2	4
5	4 each	11	9
2	3 each	2	4
5	2 each	6	4
11	1 each	6	5

Symptom duration. It is open to question how exact information obtained from routine case histories in regard to symptom duration may be. However the data on pre-operative duration of symptoms are summarized as follows:

†Dr. Veldman was at one time interne at the Butterworth Hospital, Grand Rapids. He served for six years as a medical missionary in China, returning to Grand Rapids a year ago. He has been chief resident physician at the Butterworth Hospital during the past year.

‡Dr. Warnshuis is too well known to the medical profession of Michigan to require any introduction.

TABULATION OF CASES

No.	Sex	Age	Type	Cause	Duration	Findings	Treatment	Result
1	M	48	P	Carcinoma	3 wk.	Ca. occluding sigmoid	Resection and anastomosis	Rec.
2	F	63	C	Adhesions	24 hr.	Adhesions on small bowel	Intubation two loops	Died
3	M	55	P	Adhesions	4 mo.	Adhesions splenic flexure	Adhesions broken. Tubed	Died
4	F	28	C	Adhesions	72 hr.	Adhesions ileocecal junction	Ileostomy	Died
5	F	40	C	Adhesions	12 hr.	Adhesions of ileum	Adhesions broken	Rec.
6	F	68	P	Hernia	4 yr.	Direct ventral hernia	Herniorrhaphy	Rec.
7	F	48	P	Carcinoma	3 wk.	Ca. lower sigmoid	Colostomy	Rec.
8	F	55	P	Adhesions	72 hr.	Adhesions of ileum	Adhesions broken	Rec.
9	M	61	C	Volvulus	4 da.	Volvulus of ileum	Reduction—resection	Rec.
10	F	69	C	Adhesions	48 hr.	Adhesions doubled bowel	Adhesions broken	Died
11	M	62	C	Volvulus	4 da	Volvulus of sigmoid	Reduced	Died
12	F	35	C	Adhesions	4 da	Adhesions of small bowel	Adhesions broken	Died
13	M	68	P	Adhesions	15 da	Adhesions of sigmoid	Adhesions broken	Rec.
14	M	59	C	Volvulus	4 da	Volvulus ileo-cecal jct.	Not completed	Died
15	F	26	C	Adhesions	48 hr.	Adhesions of ileum	Torsion reduced	Died
16	F	11	C	Adhesions	12 hr.	Adhesions to ileum	Adhesions broken. Tubed	Died
17	F	1 1/6	C	Intussusception	24 hr.	Intussusception jejunum	Intussusception reduced	Died
18	F	30	C	Adhesions	48 hr.	Pocket of adhesions	Resection and anastomosis	Rec.
19	F	7/12	C	Intussusception	9 hr.	Intussusception cecum	Intussusception reduced	Died
20	M	74	C	Gallstone	48 hr.	Gallstone in ileum	Gallstone removed	Died
21	M	39	C	Paralytic ileus	5 da.	Appendicitis ⊽ ileus	Appendectomy and ileostomy	Died
22	F	8/12	C	Intussusception	30 hr.	Intussusception, jejunum	Reduced	Died
23	F	3/12	C	Intussusception	12 hr.	Intussusception, ileo-cecal junction	Intussusception reduced	Rec.
24	M	29	C	Adhesions	20 hr.	Band constricting colon	Bands broken	Rec.
25	F	29	C	Adhesions	48 hr.	Omental adhesion to bowel	Bands broken. Resec. and ana.	Rec.
26	M	11	P	Adhesions	4 da.	Adhesions to ileum	Adhesions broken. Tubed	Rec.
27	F	51	P	Unknown	7 da.	Perforation sigmoid ⊽ Ob.	Colostomy in sigmoid	Rec.
28	F	23	C	Adhesions	72 hr.	Adhesions kinked ileum	(1) Adh. broken (2) Tubed	Died
29	F	34	P	Adhesions	48 hr.	Adhesions to ileum	Adhesions broken	Rec.
30	F	62	C	Enterolith	48 hr.	Enterolith in sigmoid	Enterolith passed down	Rec.
31	F	51	P	Adhesions	36 hr.	Adhesions to ileum	Adhesions broken	Rec.
32	M	22	C	Adhesions	24 hr.	Adhesions to ileum	Adhesions broken	Rec.
33	F	54	P	Adhesions	4 mo.	Adhesions to colon	Adhesions broken	Rec.
34	F	29	C	Adhesions	72 hr.	Adhesions ileum to cecum	Adhesions broken. Tubed	Rec.
35	M	24	C	Adhesions	6 da.	Adhesions bowel to wall	Adhesions broken. Tubed	Died
36	M	31	C	Adhesions	21 hr.	Adhesions ileum to old incision	Adhesions broken. Tubed	Rec.
37	M	19	C	Intussusception	33 hr.	Intussusception at cecum	Intussusception reduced	Rec.
38	M	52	C	Adhesions	4 da.	Adhesions ⊽ torsion ileum	Reduction. Sigmoid tubed	Rec.
39	M	36	P	Adhesions	2 mo.	Adhesions omentum to cecum	Adhesions broken	Rec.
40	M	35	C	Adhesions	6 da.	Adhesions to incision	Adhesions broken. Tubed	Rec.
41	F	23	C	Adhesions	48 hr.	Ulcer adhesion to ileum	Adhesions broken. Tubed	Died
42	F	60	C	Hernia	4 da.	Bowel through omental hole	Omentum severed	Died
43	F	20	P	Adhesions	2 wk.	Adhesion bowel to incision	Adhesions broken	Rec.
44	M	54	C	Paralytic ileus	4 hr.	Perforation ileum ⊽ ileus	Rupture sutured. Tubed	Died
45	F	40	C	Carcinoma	72 hr.	Ca. descending colon	5 operations	Died
46	F	42	P	Adhesions	36 hr.	Adhesion omentum to cecum	Adhesions broken	Rec.
47	F	37	P	Volvulus	3 wk.	Volvulus of ileum	Reduced and tubed	Died
48	F	20	P	Hernia	4 da.	Ileum in less omental cav.	Hernia reduced. Tubed	Rec.

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TABULATION OF CASES—CONTINUED

No.	Sex	Age	Type	Cause	Duration	Findings	Treatment	Result
49	M	39	C	Hernia	36 hr.	Diverticulum knot ileum	(Post-mortem)	Died
50	M	42	P	Undiagnosed	48 hr.	Volvulus? Ileus?	Jejunostomy	Died
51	M	31	C	Adhesions	4 hr.	Adhesion omentum to ileum	3 operations. Tubed	Rec.
52	F	45	P	Adhesions	11 da.	Adhesion duodenum—old ulcer	Post. gastro-enterostomy	Rec.
53	M	69	P	Carcinoma	3 wk.	Ca. descending colon ⊽ adh.	Adhesions broken. Tubed	Died
54	M	58	P	Carcinoma	?	Ca. cecum	Glass tube enterostomy	Died
55	F	75	P	Hernia	7 da.	Ca. umbilical hernia	Hernia reduced	Died
56	F	6/12	C	Intussusception	8 hr.	Intus. 14" ileum in colon	Reduced. Appendectomy	Rec.
57	F	28	P	Adhesions	48 hr.	Adhesion band over ileum	Adhesions broken	Rec.
58	M	47	C	Par. Ileus	5 da.	Cholecystectomy 5 da. before	No operation	Died
59	F	38	P	Adhesions	9 da.	Adhesion gut to lap. scar	Adhesions broken	Rec.
60	F	36	P	Adhesions	34 da.	Adhesions of TB peritonitis	Adhesions broken	Died
61	M	35	P	Adhesions	18 yr.	Adhesions transverse colon	Adhesions broken. Om. graft	Rec.
62	F	69	P	Carcinoma	72 hr.	Ca. sigmoid colon	Lateral anastomosis	Rec.
63	M	7	C	Intussus.	24 hr.	Intus. ileum into cecum	Reduction and appendectomy	Rec.
64	F	42	C	Par. Ileus	48 hr.	Paralysis jejunum—post-op.	Wetzel tubes in jejunum	Died
65	F	49	P	Adhesions	48 hr.	Adhesions gut to gut	Adhesions broken. Tubed	Rec.
66	F	24	P	Adhesions	18 da.	Adh. ileum to ileum and scar	Adhesions broken. Tubed	Died
67	F	68	C	Adhesions	24 hr.	Adh. ileo-cecal region	Adhesions broken	Rec.
68	M	71	P	Adhesions	6 da.	Adh. band to ileum C ulcer	Adhesions broken. Tubed (2)	Died
69	M	64	P	Carcinoma	1 yr.	Ca. of sigmoid	Colostomy	Rec.
70	M	44	C	Adhesions	10 hr.	Adhesion of ileum ⊽ torsion	Adhesions broken	Died
71	M	21	C	Adhesions	3 da.	Adhesion of ileum ⊽ torsion	Adhesions broken	Died
72	M	52	C	Par. Ileus	24 hr.	Appendiceal abscess drained	No operation	Died
73	F	72	P	Carcinoma	5 mo.	Omental Ca. obstructing colon	Omentum resected. Adh. bk.	Rec.
74	F	39	P	Adhesions	8 mo.	Adhesion of ileum ⊽ torsion	Adhesions broken	Rec.
75	M	55	P	Carcinoma	4 da.	Ca splenic flexure of colon	Colostomy	Rec.
76	M	43	P	Adhesions	18 mo.	Adhesions ileum to ileum	Adhesions broken. Om. graft	Rec.
77	F	21	P	Adhesions	5 da.	Adhesions ⊽ torsion	Adhesions broken	Rec.
78	M	65	P	Adhesions	24 hr.	Adhesions to ascending colon	Adhesions broken	Died
79	M	5	C	Adhesions	72 hr.	Rupt. app. adhesions ileum	Drainage and ileostomy	Died
80	M	30	C	Adhesions	48 hr.	Adhesions to cecum	Bowel intubated	Rec.
81	F	56	C	Hernia	72 hr.	Fem. hernia ⊽ strang. ileum	Hernia reduced. Resection	Died
82	F	31	C	Adhesions	48 hr.	Adhesions to ileum ⊽ torsion	Adhesions broken. Tubed	Died
83	M	21	C	Adhesions	27 hr.	Adhesions to gut	Adhesions broken	Rec.
84	F	51	P	Hernia	12 da.	Ventral hernia C ileum, colon	Hernia repaired	Died
85	F	27	P	Adhesions	5 da.	Adhesions to hepatic flex. colon	Adhesions broken	Rec.
86	F	2 wk.	C	Cong. atresia	2 wk.	Atresia of duodenum	Operation not completed	Died
87	M	32	P	Adhesions	10 yr.	Adhesions to transverse colon	Adhesions broken. Om. graft	Rec.
88	F	68	C	Gallstone	5 da.	Gallstone in jejunum	Stone removed	Died
89	F	51	C	Adhesions	5 da.	Extensive adhesions	2 op. Tubed. Adhesions br.	Died
90	F	31	C	Adhesions	24 hr.	Adhesions to ileum ⊽ torsion	Adhesions broken	Rec.
91	F	48	P	Endometriosis	7 wk.	Endometriosis of gut	Resection and anastomosis	Died
92	M	68	C	Adhesions	26 hr.	Adhesion to ileum ⊽ torsion	Adhesions broken	Died
93	M	66	P	Adhesions	18 hr.	Adhesion to cecum	Adhesions broken	Died
94	M	32	P	Adhesions	1 mo.	Adhesion to gut and colon	Adhesions broken	Rec.
95	M	16	C	Adhesions	48 hr.	Adhesion to ileum ⊽ torsion	Resection and anastomosis	Rec.

Pre-operative Symptom duration	No. cases	Recovered	Died
1-12 hours	8	4	4
13-24 hours	15	8	7
25-48 hours	17	9	8
49-72 hours	8	3	5
4- 7 days	18	8	10
8-14 days	6	5	1
15-21 days	4	2	2
Longer	16	11	5
Unknown	1	....	1

This summary includes all partial and complete obstructions operated upon. Because of the widely varied pathology encountered it does not show any advantage of early operation. That this is not a true relationship may be shown if only cases of complete intestinal obstruction are considered. Taking this type of case it was found that the average pre-operative symptom duration in those that recovered was 48 hours, and in those that died was 61.5 hours.

Type of operative procedure. Due to the large number of operators and the variety of pathology encountered it was difficult to classify operative procedures for the entire series. There were several groups of four or more cases in which procedures were similar enough to be grouped. These cases are reported as follows:

	Cases	Recovered	Died
Adhesions severed only	31	24	7
Adhesions severed, bowel intubated	17	6	11
Bowel intubated only	8	2	6
Resection and anastomosis	8	6	2
Volvulus or intussusception reduced	8	4	4
Colostomy	4	4	0

Adhesions and Intestinal Obstruction. The series of cases in which intestinal adhesions were a direct cause of intestinal obstruction was reviewed more carefully. There were 56 cases of this type, an incidence of 59 per cent. There were 28 partial and 28 complete obstructions. Of these patients 35 recovered and 21 died, a mortality of 37.5 per cent. The previous surgical history of these patients is summarized as follows:

No previous surgical operation—19

Typhoid fever	1
Gunshot wounds of abdomen	2
No operations	16

Previous operations—37

Appendectomy	22
Cholecystectomy	4
Ectopic pregnancy	4
Ovarian cyst removed	1
Pyo-salpingectomy	1
Not stated	5

Of interest was the observation that in nine instances obstruction was caused by adhesions to the scar of a previous operation and in five other cases there were adhesions to the anterior abdominal wall. In eight of the nine cases mentioned records of the previous surgery could be traced. In six of the eight cases there had been drainage and in three of these there was severe inflammation due to a ruptured appendix, while in three others a mild inflammatory reaction had been present. In three of the cases acute inflammation and drainage may have caused the adhesions to the operative scar, but in five cases less blame may be attached to these factors and some error in operative technic be suggested as the cause.

DEDUCTIONS

1. Early recognition and prompt operative interference is of primal importance in maintaining a low mortality rate.

2. In this series the outstanding etiological factor was post-operative adhesions. It is of vital importance that in every laparotomy great care be exercised in securing the peritonization of all denuded peritoneal surfaces. Secondly, in suturing the abdominal peritoneum it is imperative to place the sutures so that incised peritoneal edges are everted. The exercising of greater care in closing the abdominal incision will be a material factor in lessening intestinal obstruction following operation.

CONVALESCENT SERUM*

ITS USE IN THE TREATMENT OF ACUTE COMMUNICABLE DISEASES

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Convalescent serum is a therapeutic measure which has been known for many years but has not been used universally because of the difficulty in obtaining donors and preparing the serum for use. It will be my purpose this evening to outline a method of obtaining large amounts of serum and the manner in which it may be used.

The Detroit Department of Health during the measles epidemic of 1927 decided to increase the supply of convalescent serum, which they had maintained for hospital use since 1924, sufficient so as to make it available for general distribution. Previous to this time they had relied upon donors who were convalescing from the disease in the hospital as a source of supply. The serum clinic was organized to collect blood from cases of measles in the convalescent and post-convalescent stages. The following routine was adopted.

Every known case of measles which had occurred within one year received a circular letter advising them that the Health Department was prepared to pay ten dollars for a small amount of blood. If they were willing to furnish blood, to communicate by either telephone, mail or a personal visit with the nurse who had charge of making the appointments. A complete history covering both communicable and social diseases was obtained at their first visit. If their general physical condition was satisfactory, from two hundred to five hundred cubic centimeters of blood was withdraw from one of the veins of the arm into sterile centrifuge flasks. In withdrawing blood it was found a blood pressure cuff and forty millimeters of pressure would maintain a steady flow of blood, provided a clean sixteen gauge needle was introduced completely into the lumen of the vein. As soon as the blood was withdrawn it was chilled to hasten coagulation and then allowed to stand in the icebox for twenty-four hours to bring about contraction of the clot and separation of the serum. The flasks were then centrifuged to complete the separation and the serum pipetted off. Serum from five to seven donors was mixed after the Kahn test was found to be negative. A half of one per cent of phenol was added and the serum tested for sterility. Bacteriological examination proving it to be sterile, the serum was then bottled in suitable containers. Each batch of serum was tested for sterility before being released for distribution. If the donor was willing after his first bleeding and his Kahn and Wassermann tests were negative a second appointment was made two weeks later and further appointments at monthly intervals. The withdrawal of two hundred and fifty cubic centimeters of blood from an adult approximately once a month was not found detrimental in any way. In many cases it actually seemed beneficial. None of the donors lost weight or suffered any untoward effects. The majority gained weight and remarked they felt better than previous to their illness. By this method it was possible to obtain enough serum to supply the needs of those physicians who requested measles serum for both prophylactic and therapeutic use. In addition, serum was made available for all the institutions throughout the city that required it. With the success that attended the collection of convalescent measles serum, it was decided to extend the work to include all of the communicable diseases excepting diphtheria and it was possible to maintain a supply of serum adequate to meet the demand for the following diseases: Scarlet fever, measles, chicken pox, whooping cough, mumps and acute anterior poliomyelitis.

This was not the first time convalescent serum had been collected for general distribution. Richardson, of Providence, Rhode Island, in 1924 collected sufficient measles serum to make it available for city-wide distribution but to my knowledge, this is the first time an attempt had been made to supply all of the various serums such as has been done in Detroit. With the success of

*Presented before the St. Clair Medical Society, March 1, 1932.

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the Detroit Clinic, numerous municipal county and state Health Departments have begun the collection of convalescent sera. In some instances they have limited themselves to the collection of poliomyelitis serum, others have collected such sera as they felt there was a pressing need for.

It is possible in any community to obtain a fairly adequate supply if you explain to people why you wish the serum and its value. The newspapers are always willing to coöperate and the radio is an especially good means of reaching potential donors.

Turning to the use and value of convalescent sera, what will they do for us that other therapeutic agents will not? Considering scarlet fever, we have a method of determining susceptible individuals by the Dick test. Those found susceptible may be immunized by graduated doses of Dick toxin. A person having been exposed, if seen early enough, may be given scarlet fever antitoxin and prevented from contracting the disease. If not seen until the onset of scarlet fever, a therapeutic dose of antitoxin may lessen the severity of the toxemia. Scarlet fever antitoxin apparently has little effect so far as complications are concerned. There are several outstanding objections to the use of these preparations in so far as the laity is concerned. First, the reactions associated with the active immunization against scarlet fever have been so severe that the public has not accepted this means of protection to any large degree. Passive immunization of contacts by the use of Dick scarlet fever antitoxin is frequently associated with serum sickness, particularly because of the wide spread immunization against diphtheria by toxin-antitoxin. The occasional development of an Arthus phenomenon following the use of horse serum and the potential danger of anaphylactic shock following its administration are also to be considered. It is not pleasant to find a contact whom you have attempted to save from contracting scarlet fever, more sick with the reaction that follows the administration of scarlet fever antitoxin than the case of scarlet fever to which he was exposed. It is difficult for parents to understand that while the child is uncomfortable he may have been saved from a severe case of scarlet fever. In all except the severe toxic cases of scarlet fever there is always danger of being more sick from the administration of antitoxin than from the disease itself. Because of these various reactions which are associated with the use of the laboratory preparations for the treatment of scarlet fever, there is a big field for convalescent serum in the treatment of this disease. In convalescent serum, we have a therapeutic agent which will give all of the good effects that we hope to obtain by the use of Scarlet Fever Antitoxin. Because this serum is prepared from the blood of human beings we are able to assure the patients and parents that they do not become sensitized. We do not have to fear serum reactions, the danger of anaphylaxis and the danger of producing an Arthus phenomenon. Scarlet fever convalescent serum remains the best therapeutic agent available for the prevention and treatment of this disease.

Convalescent serum will protect ninety-five per cent of the contacts if it be given within two days after exposure. This immunity is short lived and expires somewhere between three and six weeks following the administration of the serum. However, if there are repeated exposures, as for example when the child must remain in the same house with the case, it is best to administer a second dose at the end of the third week in order to guard against a loss of immunity. An acutely ill case of scarlet fever of the toxic type will usually respond very quickly to the administration of a therapeutic dose, that is, thirty to sixty cubic centimeters of convalescent serum.

Measles.—Considering measles, here again convalescent serum is of great benefit. In this disease, which has a long incubation period, prophylactic use of convalescent serum may be divided into three stages: First, its administration during the first five days following exposure. If administered in doses of seven and one-half to ten cubic centimeters during this period it practically always give complete protection. Serum given in doses of seven and one-half to ten cubic centimeters during the period from five days following the exposure up to the onset of the prodromal stage attenuates the attack of measles and the only symptoms by which we may know that the child is having measles may be a transitory rise in temperature lasting a day or two at the most and the appearance of a few scattered macules over the body. If serum be administered after the onset of the prodromal stage when the child is coughing, sneezing, his tempera-

ture is high and he presents the other clinical signs of photophobia, nasal discharge, Koplik spots and so forth, doses of twenty to sixty cubic centimeters will produce a marked alleviation of symptoms. The temperature will fall, the rash will appear and disappear rapidly, the duration of illness is shortened and its severity markedly lessened. If one is not fortunate enough to see a case of measles until after the eruption has appeared, he must then pick his cases unless he has a very large supply of serum and be governed by conditions in the administration of it. If the patient be a husky, well nourished child over five years of age, who is not severely ill, serum is not essential. If the child is under five years of age, or one who for some reason was not in good health previous to his present illness, such as for example, a child with a hilus tuberculosis, or chronic sinus disease, then large doses, thirty to sixty cubic centimeters of convalescent serum, will lessen the severity and shorten the duration of the attack. Thus, it is possible to offer either complete protection, a partial immunity with an attenuated form of the disease or lessen the severity of the attack. Since measles is responsible for more deaths than diphtheria you will appreciate how valuable convalescent serum becomes in its treatment.

Whooping Cough.—Considering whooping cough, serum from adults who have recently had this disease is at times rather difficult to obtain and its use must be restricted to those individuals who need it most. Convalescent whooping cough serum in doses of seven and one-half cubic centimeters will protect the average child under a year of age, if administered within five days after exposure. Because of the great difficulty which surrounds the diagnosis of whooping cough, it is not always possible to know when exposure has occurred and it frequently happens that infants are not seen until they are in the primary stage of the disease. At this time if larger doses are given the patient can frequently be carried through with comparatively few paroxysms and the duration of the disease shortened. In children over a year of age, who have an underlying constitutional disease such as tuberculosis or chronic sinus disease, convalescent serum in large doses should be used.

Acute Anterior Poliomyelitis.—In this disease there are certain points that remain unsolved. Of these the most important are: first, the exact way or ways of transmission; second, the positive diagnosis of the disease before the moment of invasion of the central nervous system; and, third, a satisfactory method of protective immunization. Since the exact way in which this disease is transmitted is unknown, it is rather difficult to determine when a child has been exposed and consequently protective immunization is difficult to carry out. Efforts in this disease at present must be directed towards a diagnosis during the pre-paralytic stage and the use of convalescent serum at this time to prevent the development of paralyses. If the case be seen before any signs of meningeal irritation are present, large doses of serum intravenously may prevent any involvement of the brain and the spinal cord. Should the case not be seen until the onset of meningeal irritation but before paralysis has developed, intra-spinal serum will frequently prevent any paralysis. If a case is seen shortly after the onset of paralysis, it is still justifiable to use intra-spinal therapy because the reaction in the spinal cord and brain is inflammatory in type and the residual paralysis is dependent upon the amount of actual destruction of nerve tissue which results. It may be that serum administered early after the development of paralysis will aid in reducing the inflammation and lessen the amount of nerve destruction. If a case is not seen until late, that is three or four days after the onset of paralysis, it is probably useless to administer serum.

Chicken Pox.—The greatest value of chicken pox convalescent serum is where there are large groups of children such as are found in a hospital ward, nursery home or place of that type. Chicken pox serum collected from donors who have had the disease within a comparatively short time, that is, within three to six months, if administered within five days following exposure will stop an epidemic of this type. Its use as a therapeutic measure is hardly worth while because of the mildness of the ordinary attack of chicken pox.

Mumps.—Convalescent serum is of value in this disease, first, to control an outbreak such as sometimes occurs in institutions and also to protect a child to whom for some reason an attack at that particular moment would be detrimental. In these cases, mumps

convalescent serum should be administered.

There are three other diseases in which convalescent serum has been used with seemingly excellent results, although the series of cases reported are too small to positively state its exact value.

These are erysipelas, epidemic encephalitis and pneumonia in infants.

In epidemic encephalitis there have been some excellent results reported following the use of convalescent serum, both intravenously and intraspinally, and until such time as there is a more specific form of therapy, this is the best remedy available.

At the Children's Hospital, during the past three years, we collected a series of one hundred and fifty cases of primary bronchial pneumonia in infants under two years of age. Alternate cases with exactly the same treatment both nursing and medical were used, except that the one group received serum and the controls did not. In this series the mortality rate of the treated cases was only one-half as great as for those who did not receive serum, and, judging from this, the serum seems to be of benefit.

In erysipelas, of the new-born particularly, convalescent scarlet fever serum seems to lessen the severity, reduce the mortality and shorten the duration of the disease. This probably is due to the fact that there are group immune bodies produced by the scarlet fever streptococcus which are active against the various streptococci which produce erysipelas.

Convalescent sera are the closest approach to specific therapy against the communicable diseases available at the present time. Their use is becoming more wide spread as the medical profession becomes familiar with the good results they produce. A central depot for their collection and distribution is ideal. Yet, there is no reason why anyone should not avail himself of the benefits to be obtained, since practically all have donors in their practice available if they will but explain to them the good results that may be expected from their blood and draw their attention to the fact that they or their children may require serum against some other disease which they have not already experienced. If it is not possible to separate the blood serum then whole blood may be taken from the donor and administered directly to the patient. In using whole blood one must use twice as much blood as they would serum.

APPENDICITIS*

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DETROIT, MICHIGAN

The literature abounds with thoughtful articles on appendicitis and all its phases, yet with our increased knowledge of this common surgical affliction, the mortality is on the increase. The Metropolitan Life Insurance Company[1] reports: the mortality in 1911 as 10.9 per cent per 100,000; in 1928 as 13.7 per cent per 100,000. At Detroit, in 1900 the death rate was 11.2 per 100,000, while in 1930 the death rate was 18.6 per 100,000, an average over a thirty-year period in the city of Detroit of a death rate of 15.87 per 100,000, all ages. The Prudential Life Insurance Company of America,[2] reported by Frederick L. Hoffman, L.I.D., states that in sixty cities of the United States the death rate per 100,000 has increased from 13.3 per cent in 1910 to 17.6 per cent in 1925. U. S. Government reports that 20,000 die annually from appendicitis. The death rate increased from 11 per cent in 1920 to 14.4 per cent in 1925.

Deaver[3] remarked in 1928 that the important factors in the present high mortality are precipitate operation in the presence of peritonitis, and not removing the appendix that has recovered from an acute attack. Dr. Chas. Mayo[4] in referring to the increasing mortality is of the opinion that it is due to the fact that the younger generation of practitioners, who did not benefit by the ear-

*Read before the surgical staff meeting at Grace Hospital, February, 1932.

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lier period of discussion, have not recognized the seriousness of such infections, and therefore have not made haste to diagnose and to operate early. Too many operations are performed during a dangerous intermediate period, not waiting for localization, and too much has been attempted in the late operation where there is abscess. To quote the words of the late J. B. Murphy, "In every death from appendicitis, someone is to blame." Who is this somebody?

With these thoughts in mind I wish to take up in order points which I believe are helpful in diagnosis and treatment rather than the tabulation of cases.

The appendix springs from the posterior medial aspect of the cecum about one inch below the ileocecal valve. This location, lying, as it does, directly under the outlet of the small intestine, probably plays some factor in its frequent pathology. Its position should be constantly in mind, as appendiceal pain depends greatly on its location.[5]

The appendix may point upward and to the left towards the spleen (splenic position); behind the ilium and mesentery.[6] It may point downwards and to the left (pelvic position) producing so-called "left-sided pain." Inflammatory attacks producing symptoms referable to the bladder or to the rectum, or adhesions to these organs. In such instances micturition and defecation may cause painful symptoms by traction on an adherent vermiform process, and abscess may discharge per rectum or urethra. This position in the female is brought into close relation to the right ovary, and difficulty may be experienced when the ovary or appendix is at fault. The relation of pain to the menstrual period may be of some value.

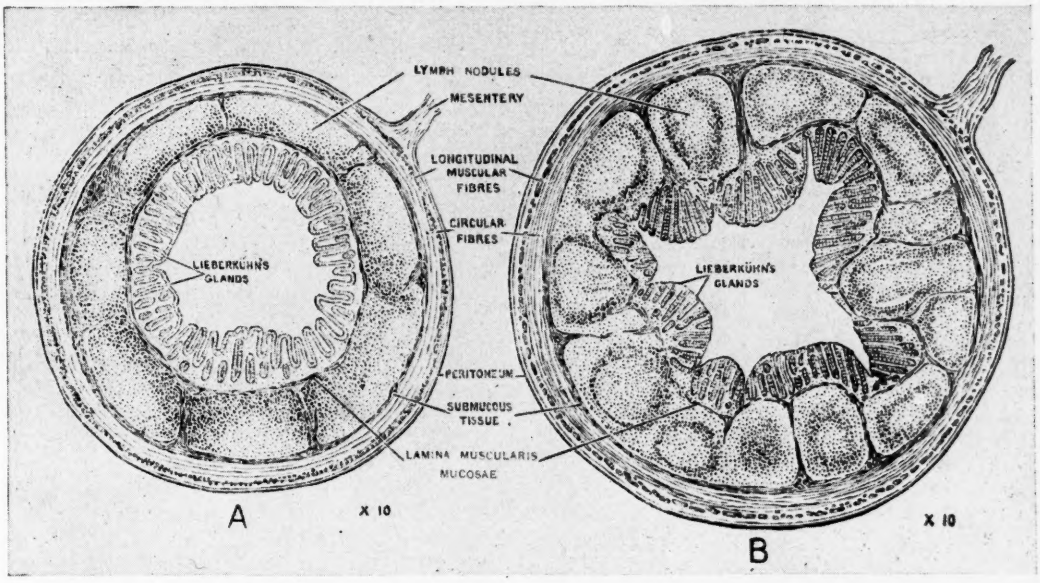

Fig. 1. *A*, Lumen of child's appendix. *B*, Lumen of adult appendix. Note larger lumen of child's.

Again, the appendix may pass forward to the anterior abdominal wall, but can only do so when it has a mesentery. This is known as the "anterior position" and when inflamed the great omentum surrounds it and the mass is easily recognized on palpation. Local tenderness and rigidity are more marked in this position.

In a large percentage of cases it lies lateral to and behind the cecum, or behind the cecum and ascending colon, and points upward. In such cases the pain is at the cecum or high up or in the loin, as the case may be. This position may give symptoms referable to the kidney or bladder. If it has a mesentery, it may lie in the retrocecal fossa. If not, it is adherent to the posterior wall of the cecum by peritoneum and lies in the anterior wall of the fossa.

ANATOMY

The structure of the appendix simulates that of the intestine; having serous, muscular, sub-mucous and mucous layers. The appendix is developed from the tip of the cecum; the fact that all three tenæ coli converge at the base of the appendix is a reminder of its primitive position. The adult position of the appendix is due to the dis-

proportionate growth of the lateral saccule of the cecum, therefore accounting for its medial and posterior position. The appendix does not have a true mesentery, but in

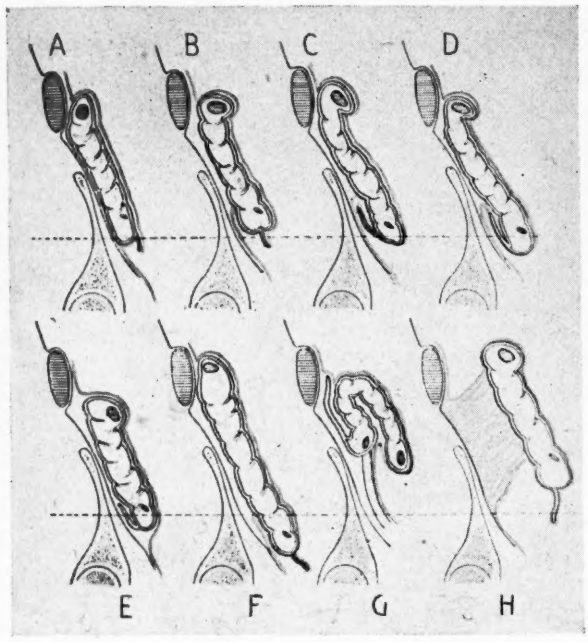

Fig. 2. Diagrams to illustrate the varying relationships of the cecum, the vermiform process and ascending colon to the peritoneum.

A. Absence of cecal fossa, posterior wall of cecum not covered by peritoneum.
B. Normal condition, cecal fossa present.
C. Cecal fossa extending upwards behind ascending colon. Vermiform process retro-cecal in position, but surrounded by peritoneum.
D. Appendix retro-cecal in position, but enclosed by the peritoneum surrounding the cecum.
E. Same as A, but appendix entirely extra-peritoneal.
F. Prolapse of cecum.
G. Undescended cecum. The terminal part of the ileum, as it ascends to the cecum, is retro-peritoneal. The vermiform process is extra-peritoneal except at its tip, which is lying in front of the kidney in the posterior wall of the hepato-renal recess. The ascending colon and the right colic flexure form a "double-barrelled colon."
H. Ascending colon with persisting mesentery, such as is encountered in intussusception.

90 per cent of cases is provided with a falciform fold or meso-appendix of peritoneum, continuous with the lower layer of the mesentery of the ileum. It is triangular and does not extend along the whole length of the tube; in fact it is too short for the appendix, and it is this fact which accounts for the twisted condition of this process, thus accounting for many pathological conditions.[7]

The blood supply is a special branch of the ileocolic artery and crosses behind the terminal portion of the ileum, where pressure may obstruct the circulation, producing stasis and passive congestion. This blood supply is very rich for the size of the organ and passes into the muscular coat at the attachment of its mesentery; therefore large gaps are present, through which infection easily spreads to the peritoneum.

The appendix differs from the intestine in that its walls are relatively thick and lumen small. The lymph nodules are closely packed, especially in young people, and occupy the submucosa. As the nature of lymph follicles is to combat infection, nature must have had some reason for so richly endowing the appendix. The lymph follicles are poorly developed at birth, but reach their full development within the first few weeks of extra-uterine life. Obliteration of the lumen is common, but is usually inflammatory in origin, not, as once thought, a change normal in advanced age. The appendix and cecum are richly supplied with the glands of Lieberkuhn and both play a part in digestion.

The nerve supply is from the sympathetic, whose stimuli pass to the semilunar ganglia, thus giving rise to the nausea and vomiting, and epigastric pain—seen in the beginning of an attack. The abdominal pain and muscular rigidity is produced reflexly over the lower intercostals and first lumbar. When the disease affects the serous coat of the appendix—which may be in a few hours—the peritoneum becomes inflamed and this accounts for the local pain and rigidity. In destructive lesions of the wall of the appendix, abdominal pain may disappear in a few hours—this is because the sympathetic nerve endings are destroyed. I think this explanation should clear up the different types of pain mentioned in the literature. It is all a matter of the degree of pathology present and location of the appendix and should not deter one from immediate surgical removal of the appendix. The nerve supply of the peritoneum may be briefly stated as follows: I divide it in two areas: (1) Active and (2) Silent. The active includes the anterior and lateral parietal walls—supplied by the lower intercostals and the first lumbar; when affected either directly or reflexly, pain, tenderness, and muscular rigidity result.

The silent areas are supplied by the sympathetic as the (a) pelvis, (b) the central, and (c) the inferior part of the post-abdominal wall. It must be understood that the term silent is only relative and only intends to suggest that inflammation affecting these parts does not cause such obvious localizing pain or muscular reflexes.

The clinical application of this can be illustrated thus: 1. A perforated gastric ulcer into the lesser peritoneal sac may give rise to few or no localizing symptoms. Contrast this with perforation into the greater sac.

2. Again an abscess may develop to considerable size in the pelvis and yet betray little evidence of its presence aside from the general symptoms of fever and toxemia.

3. The appendix that perforates behind the ileum may cause such little disturbance that the condition which causes the patient to seek advice is obstruction of the terminal ileum by the abscess which results.

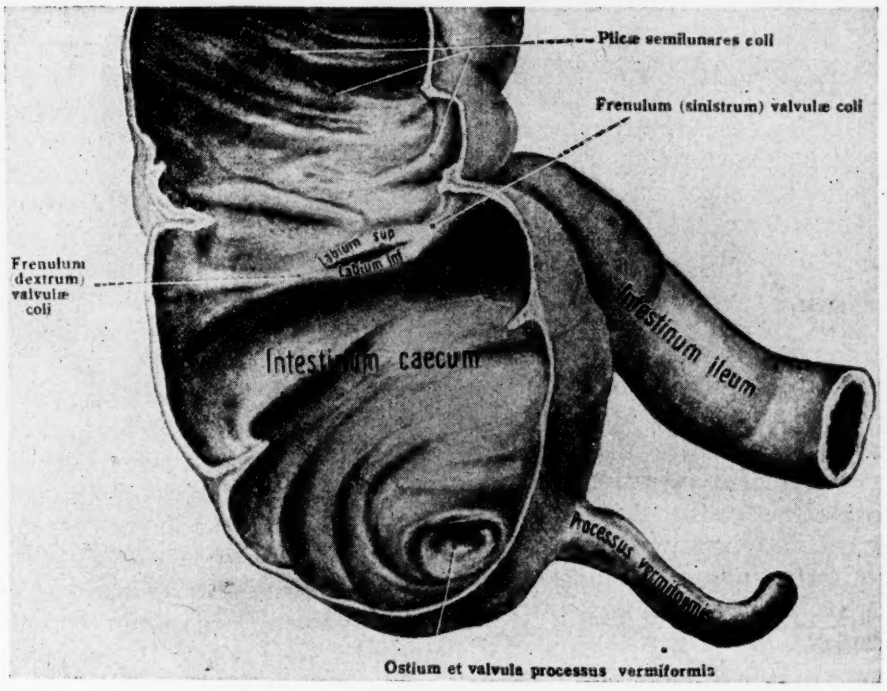

Fig. 3. The relation of the ileocecal orifice to that of the appendix.

PHYSIOLOGY

The physiology of the appendix was carefully considered and studied long ago by Sir William MacEwen. He reached his conclusions by a study of cecal secretions obtained through a fistulous opening in the cecum close to the appendiceal opening, and stated that the appendix plays a part in cecal digestion, also that the cecum and appendix play an important part in the final stages of digestion. Heile in 1914, working on dogs, excluded intestinal secretion from the appendix, introduced egg-white and fibrin into the appendix, and found that digestion took place within two or three hours, indicating the presence of trypsin. He also digested the mucous membrane of the human appendix and found trypsin, amylase, and invertase, and concluded that the appendix has to do with digestion of food rather than absorption of fluids. Therefore, the physiology of the appendix plays a rôle in the pathology of inflammation of the appendix. We also know that the position of the cecum produces stasis, that it swarms with bacteria, that its reaction is alkaline, and the acid intestinal juice pouring its contents into this produces a reaction, and a possible irritation which predisposes it to bacterial invasion.

The appendix lies one inch below the ileocecal orifice, it receives this flow directly and we believe is one of the factors that may have bearing on a diseased appendix, same as the acid stomach contents being projected onto the duodenal wall is thought to be one of the causes of inflammatory conditions of the duodenum. Disturbed cecal and appendiceal digestion, in the presence of pus organisms, produce sequelæ that have a serious effect on the appendix, resulting in chronic disease.

Accounting for the anatomy, histology, and physiology, we shall now consider the phase of the condition which concerns us most—the diseased appendix—and relate only the more common factors.

ETIOLOGY

Generally distributed; large series show an increase in males over females. Series showing a majority on the female side deal with the chronic cases and often include appendices that have been removed during gynecologic operations. In acute cases the average is 60 per cent males and 40 per cent females. In chronic cases the reverse holds good. The age incidence of appendicitis is principally adolescent and early adult life.[9] The average age 21.9 years. McCarthy figures a little higher, namely 23.5 years.

SEASONAL INCIDENTS

Appendicitis is found most frequently in the summer season, possibly due to the increased prevalence of gastro-intestinal disorders. A certain percentage of acute cases give a history of recent infection such as tonsilitis, colds, sore-throats, measles, whooping-cough, and acute infectious diseases. Recent infections were most prevalent in young children, and in one series of cases this occurred in 31 per cent. Evans at the University of Wisconsin reports: "Acute appendicitis comes in epidemics and 86 per cent showed demonstrable primary upper respiratory infections." Records show that previous attacks are given as a cause in 50 per cent of the acute cases.

Before discussing the symptoms, I think the pathological picture will be of assistance.

The classification of appendicitis according to Wilkie[10] is simple and to the point. He states, "until we realize that there are two separate and essentially different acute diseases of the appendix—(1) acute inflammation of its walls, and (2) acute obstruction of its lumen, each with its own pathology and clinical picture, we shall continue in greater or less confusion in interpreting the clinical manifestation in different cases."

SYMPTOMS

Acute inflammation of the wall of the appendix is common, and it gives symptoms constitutional in type: malaise, loss of appetite, temperature not very high—101, pulse in proportion, coated tongue, epigastric pain or discomfort, nausea or vomiting, and generally constipation. Rigidity and tenderness, later localizing in right lower quadrant, generally elicited on rebound tenderness or coughing. The milder attacks may come and go without the physician being called, either for treatment or diagnosis. The scarred stenosed and fibrosed appendices so often found are evidences of such past and possibly forgotten attacks. Progressive inflammation may result, leading to diffuse inflammation of the wall, ending in ulceration, abscess, perforation, or gangrene; however, when early diagnosis is made, prompt operative interference is the wisest course.

Acute appendicular obstruction preceding attack is usually responsible. A stenosis near the proximal end of the appendix interferes with the free egress of fecal matter; some becomes retained and hardened to form a concretion; then at some time without warning the peristaltic action of the appendix drives the concretion into the narrow stenosed area and there impacts it with complete obstruction. Experiments on animals show that upon ligation of the appendix, leaving the blood supply intact, the results depend entirely upon the contents of the appendix at the time of the obstruction. If empty, mucocele develops. If fecal matter, pus organisms, or foreign bodies become impacted, the appendix becomes distended with pus, empyema results, also perforation, and the animal usually dies in 24 hours. The same condition occurs in man in acute appendicular obstruction. The patient is suddenly seized with cramp-like pain, nausea, vomiting; pain may be in the epigastric region. This subsides and returns with cramp-like character, or in spasms. The attack may start in the night with no rise of temperature or pulse and the appendix well on its way to gangrene before help is summoned. The patient looks ill, and there is always some tenderness and rigidity in the right lower quadrant. Prompt surgical interference is demanded.

A blood count is not necessary, yet helpful, in either case. Leukocytosis generally occurs from 3 to 24 hours after the onset of pain. It is the result of absorption of toxins and not necessarily an evidence of the amount of pathology found. A low count may mean mild infection, a walled-off abscess with cessation of absorption of exudate, or poor body resistance.

Rectal or vaginal examination should always be made. Textbooks and general teaching lay great stress on pain, tenderness, and muscular rigidity as cardinal symptoms. I would say they are over-emphasized. True, they are most all present at some time and

in some degree—and from what has been previously said in regard to the structure of the appendix, it is easily seen how the intensity, character, and duration of these symptoms are altered; by the position of the appendix, its relations, and by the degree of pathology present. For instance, when the anterior and lateral abdominal wall is involved, pain, tenderness, and rigidity are marked. Again, pain may be the first symptom, yet after two or three hours when seen by the physician, the patient may state that the pain is relieved, and on examination little rigidity and only slight pain may be present. However, the appendix may be on its way to gangrene or in a position not in contact with the peritoneum. Delays are dangerous, if we wait for further increase of these signs and symptoms. LaRoque[13] recently reported 500 cases in which Britain's sign was positive—for gangrenous appendicitis. It may be of value in doubtful cases and is as follows: On light palpation over McBurney's Point, the right testicle is drawn up into the scrotal sac.

TREATMENT

Never use ice bags, morphine nor cathartics. To operate all cases, no matter at what stage they are recognized, is to allow reason to be overruled by prejudice. There is no expectant treatment in acute appendicitis; when diagnosed in its early stages, immediate operation should be carried out; if this is refused and the patient survives, interval operation should be done. The acute appendicular obstruction case with cramp-like pain should be treated as any other case of acute intestinal obstruction and operation done immediately, otherwise perforation into the peritoneal cavity will result. Such an appendix may be well on its way to gangrene in a few hours after the initial attack. Removal through ample incision so that the distended appendix is removed without rupture is the only rational treatment. If the appendix is removed without rupture, even though it be gangrenous no peritoneal drainage is necessary.

As to the other type, acute inflammation of the wall of the appendix, this may last for two or three days or longer; it may subside or go on to ulceration or abscess formation and perforation. Gangrene and perforation, however, do not generally follow so rapidly as in the obstructive type. When operation is performed, no exploration should be undertaken, because in the presence of infection none should be attempted, and in these early localized cases operative trauma should be reduced to a minimum. Drainage depends upon the character of the exudate.

The fulminating perforated appendix should be operated at once, if seen early. This type goes on from bad to worse and can be likened to an acute perforation of a peptic ulcer. Delays are dangerous. Often the deterring factor against immediate operation is the pronounced muscular rigidity due to the peritoneal irritation and not peritoneal inflammation. It can be likened to muscular rigidity in early perforated ulcer and does not contra-indicate immediate operation.

When a case of appendicitis is not seen or not recognized until the fourth day, the question of operation is a much more difficult one to decide. If there be general distension or if a firm inflammatory mass be felt and no evidence of a considerable collection of pus; if the patient's general condition is good and the pulse below 110, it is wiser to treat on expectant lines with morphia, rest, and proctoclysis. If a localized abscess develops, this may be evacuated. A great many patients who have successfully weathered the peritoneal storm for four days will recover. A meddlesome operation will precipitate a great many of these cases into a critical condition, terminating in death.

As Deaver[11] points out, the localized or the circumscribed appendicitis of the acute type with pain, tenderness, and rigidity should be operated early. Where the peritoneal inflammation is extending, where purgatives have been used, the pain becoming more diffuse rather than localized, showing great peritoneal involvement with feeble peristalsis, the expectant treatment should be carried out. However, if these cases are seen early and there is considerable muscular rigidity, they can be successfully operated on in this state, as the cause of the peritonitis may be removed. Otherwise, expectant treatment with proper technic, Fowler's position, saline and glucose solution, morphine, and nothing by mouth is much the better, and operation performed when the peritoneal inflammation has become localized.

The success of this delayed treatment was first mentioned by Ochsner in 1902. Lon-

don hospitals report 3.8 per cent mortality for delayed operations, 6.7 per cent for immediate operations, in these cases. One hesitates to advise delay as it may be misconstrued to mean the adoption of medical treatment. However, the delayed treatment is surgical treatment. Many will respond to this regime but after twenty-four hours under this treatment, if pulse and temperature do not fall and patient complains of increasing pain and distention, operation may be done.

The late cases are the general diffused peritonitis, with general rigidity of the abdominal wall, absence of abdominal breathing, rapid pulse, high temperature, blood picture high, this changing in 24 hours, especially in the ones that have been purged, to that of general abdominal distention, rigidity and tenderness not so decided, entire absence of peristalsis, rapid feeble pulse, peritoneal facies, low leukocyte count but a high poly count, restlessness and active brain. These cases should not be operated.

The abscess cases should be drained without manipulation and told to return in three to four months for removal of appendix.

While the remarkable recuperative powers of the undamaged peritoneum may be trusted to deal with all moderate infections, provided no gross foreign matter is left, it is equally true that where ragged and especially oozing surfaces are laid bare, a drain to the damaged area is logical and helpful surgery. In the early perforated cases or dirty cases, drainage into the pelvis and, if the lateral colic gutter is involved, drainage into Morrison's pouch and up over the liver, between the liver and diaphragm, is indicated, as the amount of peritoneal reflection in this area, if spread out, would cover considerable distance, and it has been shown that subphrenic abscess is less likely to develop. These with a small drain down to the lateral side of the cecum, are the areas to be kept in mind.

POST-OPERATIVE TREATMENT

Simple cases—ordinary post-operative treatment. If the case be one of ruptured appendicitis and peritonitis is present, our effort should be to keep the intestines quiet for the first thirty-six to forty-eight hours. For this reason I believe fluids by mouth or bowel are contraindicated. Fowler's position, morphine in small doses, and saline and glucose intravenously or subcutaneously are preferable. The passage of gas by bowel is an important diagnostic sign indicating that the peritoneal inflammation is subsiding, and that the intestine is regaining its tone; at this time a small glycerine enema is helpful. The Levine tube passed through the nose into the stomach relieves vomiting, which only stirs up additional peritoneal irritation by retching.[12] The tube is easily passed and does not cause the gagging the ordinary stomach tube does; besides, in cases of high temperature, the patient can be encouraged to drink plenty of cold water and by compressing the tube an internal cold water bag is made of the stomach which is in proximity to the pancreas, liver, and spleen, and with external sponging soon reduces fever. I believe a great many cases of dilated stomach and ileus are prevented by the timely use of the Levine tube. When not so relieved one should not delay in doing a valvular type of enterostomy, in one, two, or more places, if necessary. Time will not permit of differential diagnosis, incisions, etc.

CHRONIC APPENDIX

From what has been said in regard to structure, blood supply and physiology, it is perfectly evident that the appendix is subject to the same disease and upsets that arise in the gastro-intestinal tract in general, or following inflammation from other parts of the body. The degree of the severity of the symptoms may be mild or severe. It is true that a great many of the mild grades clear up without the doctor being consulted, or, if called, he wishes to wait a few hours to see whether the patient gets better or worse. These repeated mild recognized or unrecognized attacks undoubtedly cause changes in the appendix which pave the way for future trouble, that destructive lesions in the appendix are the result of these attacks predisposing the appendix to new infections.

SYMPTOMS OF CHRONIC APPENDIX

1. The only sure diagnosis in most cases is the history and observation of the patient who has had an unquestioned acute attack. Without acute attacks the three principal symptoms are pain, gas, and indigestion. When repeated attacks occur, particularly in young individuals, a presumptive diagnosis of appendicitis is justified. The third picture is that devoid of any typical symptoms

but a sense of oppression in the abdomen. discomfort or ache, rather than actual pain. These pain symptoms are due to structural changes, and are true chronic inflammatory thickening of its several coats; in catarrhal inflammation of the mucous membrane the pain is apt to be of a more steady type. In mechanical lesions the pain is of a more colicky type. Slight pain on deep palpation, constipation, gastro-intestinal symptoms without relation to food are very suspicious of chronic appendix. Time will not permit of differential diagnosis.

Brief mention must be made of appendicitis in children. The mortality in early life is extremely high. Nurslings 70 per cent. Cases under two years—50 per cent. Under six years to fifteen years—40 per cent. Certain anatomical variations help to explain why appendicitis is so serious in childhood.

1. The cecum may not have rotated or descended normally.

2. Appendix itself is much longer, larger, more funnel shaped, contains a larger proportion of lymphoid tissue, and is more delicate in structure.

3. Position is less constant. It may be found under McBurney's Point or anywhere in the abdomen; under the liver, in the pelvis, or well over to the left side. Occasionally it is fixed by a vestigial band or fold.

4. The omentum is delicate, veil-like thickness and offers a feeble barrier to the spread of inflammation. Knowing this antomical difference, it is easy to understand why appendicitis is much more insidious in onset, the spread of inflammation more rapid, the intoxication more overpowering; it is not difficult to see why the disease is so serious in the very young. Many cases of indigestion colic, gastritis, gastro-enteritis, acidosis, and many acute infections accompanied by abdominal symptoms, such as pain and vomiting, are in reality instances of unrecognized appendicular disease. Many cases go on to spontaneous recovery, but in every attack of acute abdominal pain, it is a safe rule to assume that the appendix may be involved, and then proceed to verify or rule out the suspicion.

The habit of deciding that such disorders are due to dietary indiscretions and that purgatives will relieve the indigestion colic is responsible for many deaths.

CONCLUSIONS

1. The mortality of appendicitis is on the increase.

2. The anatomy, physiology, and the varied positions of the appendix, with simple classification, are given, and their relation to symptoms stated.

3. A plea is made for the early removal of both acute and chronic types; and proper surgical treatment in the delayed cases is discussed. These factors I believe will greatly help reduce our present mortality.

1504 EATON TOWER

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A SUGGESTED TREATMENT FOR THE DEPRESSION

It is interesting in the period of financial depression that now confronts us to consider some of the extraordinary therapies suggested by various observers. In Germany the suggestion has recently been made that the government devise some plan for officially removing the gold from the teeth of the dead. It has been estimated by a competent German economist and investigator that dental gold worth 11,300,000 marks, or approximately $3,000,000, was buried with the bodies of 805,973 persons who died in Germany during the year 1929. Most of the gold used is 21 carat gold. The suggestion is not new, but Hoffmann has worked out a technic for recording installation and for control of extraction of the gold. Approximately 25 per cent of the value of the gold recovered would be applied to the cost of recovering it. It is perhaps difficult to consider this suggestion seriously. Somehow there rings in the ears the famous cry of the prospector, "Thar's gold in them hills!" But it is conceivable that the progress of civilization may lead eventually to effective and economic utilization of many other types of mineral and financial resources now wasted.—*Journal A. M. A.*

BENEFICIAL EFFECT OF N-PROPYL DISULPHIDE IN POLYCYTHEMIA VERA

CASE REPORT

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DETROIT, MICHIGAN

Sebrell[1] reported the induction of anemia in dogs by the feeding of onions. Gruhzit[2, 3] subsequently studied the factors in onions producing anemia in dogs and reached the conclusion that the hemocidal substance responsible was present in the oil. Allyl propyl disulphide, the main constituent of onion oil, was not available, hence a series of related compounds possessing the disulphide linkage—S—S—were given to dogs to ascertain their red-blood destroying activity.

N-propyl disulphide was found by Gruhzit to cause destruction of red-blood elements in dogs when given in doses of 0.067 to 0.122 c.c. per kilogram of body weight. No intolerance or untoward phenomena were observed. It was believed, therefore, that this drug might be useful in the treatment of polycythemia vera. The result of prolonged administration in one patient has been attended with some success. Two other patients have been given the drug but failed to coöperate for a sufficient period to permit adequate study.

REPORT OF CASE

Mrs. A. P., married, age forty-eight, complained of pain in both knees and flushing and tingling in face and hands. Had occasional severe epistaxis. Physical examination showed a florid, dusky complexion, injection of conjuctivæ, engorgement of fundal veins and an enlarged spleen. Laboratory findings: R.B.C. 10.25 million per cu. mm. Hemoglobin (Sahli) 125 per cent. Fragility test within normal limits. Kahn reaction negative. Gastric analysis, free HCl 2° following alcohol-histamine test meal. Roentgenogram of lungs was negative.

Salient Features of Treatment. The patient was under observation 14 days without any treatment except a diet low in protein. There was considerable fluctuation of red-blood cells and hemoglobin, the erythrocyte range varying between 8.37 million per cu. mm. and 10.2 million per cu. mm. There was a slight change in the hemoglobin; the lowest estimation was 125 per cent (Sahli) and the highest 137 per cent (Sahli). She complained of headache, nervousness and shortness of breath on slight exertion.

The following chronological record shows the scale of dosage of N-propyl disulphide and the changes in the red-blood cells and hemoglobin content during a period of 15 weeks:

	R.B.C. million	Hemoglobin per cent	
Sept. 10, 1931	8.75	135	N-p disulphide 0.15 c.c. daily
Sept. 17, 1931	8.00	125	Same dosage
Sept. 25, 1931	8.10	127	Same dosage
Sept. 29, 1931	8.60	137	N-p disulphide 0.3 c.c. daily
Oct. 3, 1931	8.00	122	N-p disulphide 0.4 c.c. daily
Oct. 12, 1931	7.55	116	Same dosage
Oct. 20, 1931	7.00	120	N-p disulphide 0.45 c.c. daily
Oct. 27, 1931	6.90	120	Same dosage
Oct. 31, 1931	6.85	116	N-p disulphide 0.6 c.c. daily
Nov. 13, 1931	7.00	125	N-p disulphide 0.75 c.c. daily
Nov. 20, 1931	6.10	112	Same dosage
Dec. 10, 1931	5.70	102	Treatment discontinued
Dec. 17, 1931	6.10	110	No treatment
Dec. 22, 1931	5.60	108	N-p disulphide 0.9 c.c. daily
Dec. 30, 1931	4.70	100	Treatment discontinued
Jan. 7, 1932	4.70	94	No treatment
Jan. 15, 1932	4.85	95	No treatment

Comment.—On the day treatment was started by the oral administration of 0.15 c.c. N-propyl disulphide in olive oil the red-blood cells were 8.75 million per cu. mm. and hemoglobin was 135 per cent. There was not much change in the red-blood elements during 18 days treatment with this dosage of the drug. In succeeding periods the disulphide was increased until an effective hemocidal (?) action was obtained with 0.90 c.c. daily. The erythrocytes were re-

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duced to 4.70 million per cu. mm. and the hemoglobin decreased to 95 per cent (Sahli) by a gradually increasing daily dosage during 15 weeks. The maximal amount of 0.9 c.c. daily was used only during the last week of therapy. Her general physical condition improved appreciably as the red-blood cells and hemoglobin reached the lower levels recorded above.

The drug is excreted by the lungs in a sufficient concentration to give a pronounced odor of onions to the breath continuously. No side-reactions were observed. Whether or not the drug accumulates in the body to any extent has not been determined. The last mentioned red-blood cell and hemoglobin levels have persisted for two months after withdrawal of the medicament. It is not obvious what physiologic factors operate to account for the sustained hemopoietic depression.

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A CASE OF ALLONAL POISONING

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The use of derivatives of barbituric acid as hypnotics and sedatives is widespread and increasing, and the sale of these drugs subject to no restrictions has resulted in numerous reports of poisoning and of death. The literature contains numerous references to the clinical symptoms accompanying overdosage of varying derivatives, and, although descriptions of postmortem findings are summarized in a few texts, there seems to be little accurate descriptive material available. Claims on the part of manufacturers concerning the toxicity of various derivatives for the most part are meagerly substantiated. Hence, it would appear that postmortem findings in suitable cases should be published until such time as the picture becomes more clearly defined. For this reason the following case is presented:

Early last summer a young woman was found in a room in a local hotel, unconscious, nor could she be aroused by any efforts. Search of her room disclosed the presence of three empty bottles labelled *allonal*. Although there is no possibility of proving the connection between these bottles and the ultimate death of the girl, there is every reason to believe that her symptoms and death were caused by the ingestion of thirty or more tablets. Inasmuch as allonal tablets contain amidopyrine and since the proportion of the two compounds is not stated, it is not possible to ascertain definitely the amount of allonal taken. A conservative estimate, however, would indicate that a minimum of 60 grains was ingested. According to Webster,‡ the average minimal fatal dose of any of these compounds is in the neighborhood of 50 grains, although recovery has been reported from doses exceeding 300 grains. From the standpoint of prognosis in the case under discussion, this point is of interest for it indicates that the patient had a fair chance of recovery. The subsequent events show that such a prognosis would have been warranted.

The patient was taken to the hospital in coma from which she never emerged, although shortly preceding death she showed definite signs of regaining consciousness. The duration of the coma was six days. She developed clinical signs of pneumonia which autopsy confirmed and her immediate cause of death can be ascribed to bronchopenumonia.

The autopsy protocol was essentially negative except for the following points:

"On opening the stomach and intestines a marked degree of injection is evident. The congestion in the smaller blood vessels is not uniform, although it extends throughout the length of the bowel. The liver is normal in size and weighs 1,360 grams; it is not particularly congested. The kidneys are small, weigh 120 grams each, and show marked hyperemia, especially in the medullary portion. The left lung is collapsed and weighs 380 grams; on section it is normal. The right lung is distended and weighs 730 grams. On section it is congested, pale pink in color and dry. The alveoli cannot be made out."

Microscopical examination shows hyperemia in practically all organs; the lungs, liver and kidneys, however, are of particular interest. In addition to acute passive congestion, the right lung shows, as was expected from the gross examination, a severe bronchopenumonia in the stage of early grey hepatization. The liver fails to show the evidence of advanced passive congestion. Higher magnification (16 mm. objective), however, shows some hyperemia and cloudy swelling. There is definite fatty degeneration and the bile channels are filled with amorphous debris. There is some pigmentation.

The kidneys are of most interest in this case and as will be seen from the low magnification (Fig. 1) there are numerous petechial hemorrhages in the medullary portion. The glomeruli even at this mag-

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‡Webster, R. W., Legal Medicine & Toxicology. W. B. Saunders Co., 1930.

nification appear normal. With the 16 mm. objective these hemorrhages are seen in the interstitial tissue and the epithelium of the collecting tubules is apparently unaffected except for some cloudy swelling. Figure 2 shows the cortex of the kidney including a glomerulus which, except for hyperemia and edema, appears normal. A study of the convoluted tubules in this section is surprising in view of what the literature contains as to pathology in cases such as this one. The tubular epithelium, although exhibiting some cloudy swelling, is remarkably well preserved, and there are no casts or collections of blood cells in the lumina. There is some edema and that is all. It could not be said that the damage to any of the organs studied was sufficient to account for the death. Unfortunately, the head was not examined, so that on the basis of what we have, the cause of death was bronchopneumonia, although it should be noted that this patient had undoubted cerebral pathology, especially about the respiratory centers.

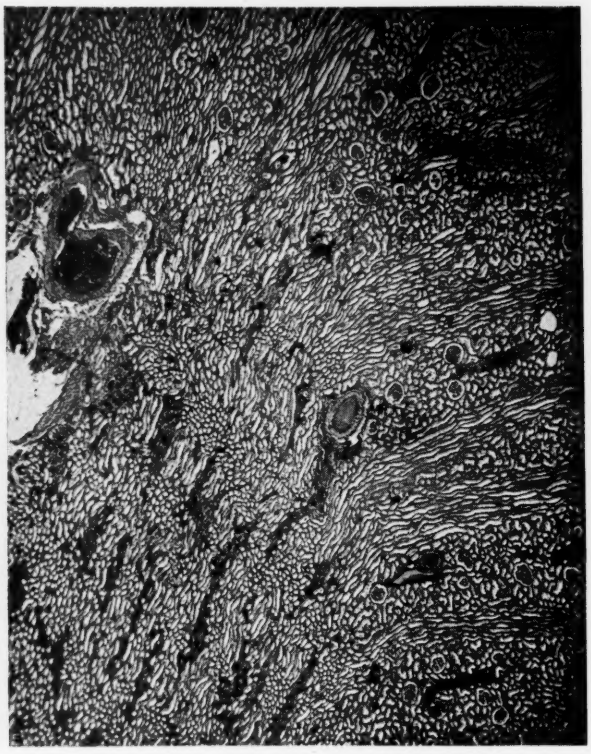

Fig. 1. Kidney, low magnification, showing numerous petechial hemorrhages.

Fig. 2. Cortex of the kidney, normal except for hyperemia and edema.

In his discussion of the pathology of poisoning with the derivatives of barbituric acid, Webster paints the following picture. To quote:

"The changes found at autopsy are not characteristic. There is a general hyperemia of practically all the internal organs, pulmonary edema, cardiac dilatation, usually a bronchopneumonia and some cerebral edema, The liver may show fatty changes, while the kidneys usually show extensive degeneration of the epithelium of the convoluted tubules with petechial hemorrhages in the pelves." Where Webster obtained these data is not apparent from his book, for he gives no references nor have I been able to find in the literature any presentations of autopsy findings in similar cases. In many respects the findings in this case confirm Webster's statements except for the failure to observe significant kidney damage. In view of the fact that this is probably the most serious of the changes described by Webster, the question arises as to whether or not there is some basis for the claims regarding the toxicity of allonal. Since the dosage in this case cannot be accurately determined, nothing can be made of such a claim. It does seem, however, that detailed studies of similar cases, and they will occur with some frequency as the years go by, will do much towards increasing our knowledge of the effects of these drugs.

EFFECT OF EVAPORATED MILK ON THE INCIDENCE OF RICKETS IN INFANTS

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Rickets, though much progress has been made in controlling it, is still a disease of importance. Hess et al[1] estimate that three-fourths of the Negro and at least one-half of the white infants of the poor families attending their health centers in New York City have definite signs of rickets, and observations in Detroit show a similar situation. Any infant food which would be as satisfactory as ordinary pasteurized milk, and which would be, at the same time, as available, as cheap and produce less rickets would be a great boon to our infant population.

From the statements which have appeared from time to time in the literature it seemed that evaporated milk might be such a food. Lowenburg[2] reported that he found no rickets in 175 infants who were given evaporated milk formulæ and no cod liver oil. Rice[3] feeding evaporated milk formulæ acidulated with sauer kraut juice found that healing took place in cases of active rickets. The effect would seem necessarily to have been due to some agency other than sauer kraut juice since vitamin D is not present in any important quantity in sauerkraut. Unless the changes were due to climatic conditions it seemed likely that the more easily assimilable calcium and phosphorus of evaporated milk helped with the healing. There is, according to Sherman and Stiebling,[4] an appreciable amount of vitamin D in cows' milk; and Daniels and Jordan,[5] Willard and Blunt,[6] Kramer, Latzke and Shaw,[7] all attest to a greater calcium and phosphorus absorption from evaporated milk than from plain pasteurized milk. It seemed possible that with the greater utilization of calcium and phosphorus from evaporated milk the vitamin D present in cows' milk might be sufficient to protect against rickets.

With this question in mind a group of 199 infants from the child welfare clinics in Detroit were observed during the Winter months. Seventy babies, Group A, were given evaporated milk formulæ but no cod liver oil. Sixty-two infants, Group B, were given evaporated milk formulæ and three teaspoons of cod liver oil daily. All children used were free from rickets clinically and by X-ray at the beginning. A third group, C, composed of sixty-seven infants were fed plain pasteurized milk formulæ and given three teaspoons of cod liver oil daily. All these infants were examined clinically, had X-rays of the long bones ordered each month and any who developed early signs of rickets or whose parents were not coöperative were given cod liver oil—and ultra-violet irradiation if it was thought advisable.

Table 1 shows all groups to be closely comparable as to age. The groups are of similar size and there is only slight variation in racial distribution. Group A was composed of fifty-four white and sixteen colored infants, Group B of forty-nine white and thirteen colored and Group C of thirty-two white and thirty-five colored babies. Group A and B comprise one hundred thirty-two infants on evaporated milk formulæ who were observed over an average period of 103.9 days each. The average gain per baby was 0.62 ounces per day. This group was significantly superior to Group C, which numbered sixty-seven infants on plain pasteurized milk and who gained only 0.46 ounces per day per patient. Nutritionally evaporated milk formulæ are obviously somewhat more satisfactory than plain pasteurized milk formulæ.

Table 2 shows the results of the X-ray films of the groups, with an additional Group D which is composed of forty-five breast and formula fed infants observed a preceding Winter.[8] The formula babies in Group D were given plain pasteurized milk formulæ and only the percentage rachitic and non-rachitic is shown.

Group A showed thirty-one cases, or 44.3 per cent, of the infants developed rickets on evaporated milk without cod liver oil. There is some evidence of superiority of this group compared with Group D which had 55.5 per cent rachitic on a plain pasteurized milk feeding without cod liver oil. Group B who received evaporated milk plus cod

TABLE 1

Groups	No. of patients	Av. age at start in months	Av. No. of days per pt.	Av. gain in oz. per pt. per day	Racial distribution	
					White	Colored
A	70	4.4			54	16
B	62	3.5			41	11
A plus B	132	3.9	103.9	0.62		
C	67	4.1	101.6	0.46	32	35

TABLE 2

Groups	No. of patients	Feeding	Results of X-ray	
			Rickets	No Rickets
A	70	Evaporated milk and no C.L.O.	31 (44.3%)	59 (95.2%)
B	62	Evaporated milk plus C.L.O.	3 (4.8%)	39 (55.7%)
C	67	Plain pasteurized milk plus C.L.O.	3 (4.5%)	64 (95.5%)
D	45	Breast and formulæ and no C.L.O.	55.5%	44.5%

liver oil and Group C who received plain pasteurized milk plus cod liver oil are practically identical in their final results. Group B showed 95.2 per cent free from rickets and Group C 95.5 per cent normal. Babies given three teaspoons of cod liver oil daily are generally well protected against rickets whether fed evaporated milk or plain pasteurized milk. Also, babies who are given evaporated milk, to be adequately protected against rickets must be given cod liver oil.

CONCLUSIONS

1: One hundred thirty-two infants were given evaporated milk mixture during the Winter months and showed an average daily gain of 0.62 ounces while sixty-seven infants who were given plain pasteurized milk formulæ and similarly studied showed an average daily gain of 0.46 ounces. This seems to show a significant superiority for the group fed evaporated milk.

2. Seventy infants given evaporated milk formulæ were given monthly X-rays but no cod liver oil and 44.3 per cent developed early signs of rickets. The remaining 55.7 per cent were negative. Evaporated milk without cod liver oil did not, under the conditions of this study, protect adequately against the development of rickets.

3. Sixty-two infants were given evaporated milk formulæ, three teaspoons of cod liver oil daily and X-rayed monthly. Four and eight-tenths per cent developed rickets as compared with a group of sixty-seven infants fed on plain pasteurized milk formulæ in which 4.5 per cent became rachitic. No evidence of superiority of either group is shown.

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REPORT OF CASE OF CHYLE CYST OF THE MESENTERY*

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Chyle cysts of the mesentery are of interest because of their rarity, history, origin and the infrequency of their being diagnosed preoperatively.

The first case of this to be described was in 1842 by Rokitansky, who wrote at length concerning the findings at autopsy. In 1912, Emmanuel Friend[1] summarized the literature up to that time with fifty-two authoritative cases. In 1913 A. L. Benedict[2] revamped Friend's work and added cases up to ninety-six. He made the statement that there were probably not more than 200 cases that could be found by extensive search. The records of many hospitals, including Memorial Hospital, give no report of chyle cysts. Few surgeons even of large experience have had the opportunity of seeing this rare condition.

Before taking up the etiology, it might not be amiss to discuss briefly some of the anatomy of the mesentery. As you know, the mesentery of the small bowel contains the blood vessels, lymph vessels, mesenteric nodes and fat, between its two layers of peritoneum. The lymph vessels are called lacteals because of the color of the lymph here. They are found by two plexuses in the villi of the small intestine, one beneath the muscular coat and one below the mucous membrane. They anastomose and pass to the first series of mesenteric glands and then through the second and third series where they unite with larger trunks which in turn unite to form the receptaculum chyli, which is the beginning of the thoracic duct. This duct therefore drains the lymph from the parts below and also the chyle from the intestines.

ETIOLOGY

There is no definite etiology known but they probably are of embryonic origin as they are frequently found in the young. Dr. Dowd[3] believes they are occlusion remnants in the developing peritoneal folds. Drs. Strode and Fennel reported a case in an infant which showed all the coats of the intestines and probably originated from misplaced entoderm epithelial cells in the walls of the gut. Moynihan, in his classification, believes they arise from obstruction of some of the lacteals, although he has been unsuccessful in producing them experimentally. There is also a possibility that trauma might be an etiological factor.

INCIDENCE

Sex apparently plays no part, as they are about equally divided. The age incidence in the series of ninety-six cases is as follows: under one year, 5; one to five, 6; six to ten, 9; eleven to fifteen, 4; fifteen to twenty, 7; twenty-one to thirty, 15; thirty-one to forty, 12; forty-one to fifty, 6; fifty-one to sixty, 8; sixty-one to seventy, 3; seventy-one to eighty, 3; not stated, 18. From this we can see that there is no special age incidence.

PROGNOSIS

The prognosis is especially and surprisingly good considering that most cases are operated upon by surgeons who necessarily had had very little if any experience with the condition. Sixty of the ninety-six cases recovered, fourteen died post-operative, twelve were diagnosed at autopsy, sometimes after many years' duration and sometimes after death from other causes. In ten cases the results were not recorded.

SYMPTOMATOLOGY

There are no symptoms which are pathognomonic of either chylous or mesenteric cysts. Miles F. Porter[4] states that pain is the most constant symptom, especially if pressure is a factor, coming in attacks at various intervals of a few months to years. It is usually associated with vomiting, especially if there is encroachment of the nerves and blood vessels of the gut, and often with alternating attacks of constipation and diarrhea. If there is a partial obstruction or partial volvulus, there is an accompanying increased peristalsis to overcome the obstruction. Strangulation and gangrene of

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the gut may occur due to pressure. These cysts may be crossed by gas filled gut and would give a tympanic sound. Small cysts may give no suggestive symptoms and could easily be confused with acute appendicitis, volvulus, intussusception, cholecystitis, ectopic pregnancy, or ruptured ulcer.

DIAGNOSIS

As far as I have been able to find, no one has made a preoperative diagnosis of chylous mesenteric cyst or even mesenteric cyst. According to Atchly[5] the following symptoms, if borne in mind, would be of value in making a diagnosis:

1. Movable tumor, that is only slightly painful.
2. Normal or low blood count in the absence of obstructive symptoms and inflammation.
3. Vomiting.
4. Tympanic areas in close proximity to dull areas.
5. History of abdominal trauma previous to finding of tumor.
6. Pain of mild or severe obstructive nature increasing in attacks at varying intervals in absence of acute inflammation.
7. Diarrhea alternating with constipation in connection with the above symptoms.
8. X-ray examination showing narrowing of lumen of gut, that is, in relation to tumor mass.

COMPLICATIONS

Complications that are likely to occur are:

1. Intestinal obstruction.
2. Adhesions.
3. Intussusception from hyperperistalsis.
4. Hemorrhage into cyst.
5. Peritonitis.
6. Torsion of cyst and volvulus.
7. Impaction in pelvis.
8. Dilation of stomach.
9. Intestinal paresis.
10. Rupture of cyst. Dr. F. K. Dutton (VI) of Springfield has reported an interesting case of rupture of chylous cyst with recovery.

TREATMENT

1. Enucleation if possible.
2. Incision and drainage.
3. Marsupialization.
4. Aspiration.
5. Resection if the circulation has been damaged too extensively.

CASE REPORT

On February 28, 1939, I was called to see a young man of twenty-two who was suffering excruciating pain in the upper left quadrant of the abdomen. This began suddenly while he was putting his lunch in his lunch basket. The pain caused him to fall to the floor, and he was unable to walk, talk or anything else except cry and scream with pain. One half grain of M. S. did not relieve appreciably. The abdomen was rigid and a provisional diagnosis of ruptured ulcer was made and immediate operation advised.

His past history showed usual children's diseases. "Flu" in 1918 with good recovery. February, 1929, he fainted while at work in the foundry and slept for several days, gradually recovering. No diagnosis was made at that time.

Physical examination: Pupils react to L. and A.; mouth fair condition; no enlargement of thyroid; chest negative to P. and A.; heart normal in size. no murmurs or irregularities; abdomen rigid throughout; extremities and reflexes O. K.; Kahn test negative; urine, negative.

At operation there was found "a large mesenteric cyst filled with chyle—volvulus—knot tied in ileum about six feet from ileocecal valve." The volvulus was relieved, the tumor mass was aspirated and a specimen removed for pathological diagnosis. This specimen was unfortunately lost in the mails. His convalescence was uneventful and he left the hospital on the fourteenth day.

He remained in excellent health and free from any abdominal symptoms until January 3, 1930, when, a short time after the evening meal, he was suddenly seized with severe abdominal pain similar, but not as severe as the previous attack. He waited until morning before calling me. He was brought to the hospital by ambulance and operated upon about one hour later. Operation: Abdominal section. A band of adhesions extending from the chylous cyst encircling the gut causing strangulation. The cyst was about one-half as large as at previous operation. The band was freed and gut straightened out and a portion of the cyst was removed for pathological diagnosis. The raw area was covered over. The report from Dr. Warthin was "mass of atypical lymphatics—lymphatic cyst—no inflammatory reaction." He had a normal convalescence and went home on the nineteenth day, feeling fine.

About three weeks after leaving the hospital, he began having attacks of pain in the abdomen, not as severe as on previous occasions and relieved by enemata. On February 3, he had an attack which was not relieved by an enemata or morphine, so he was brought to the hospital. There was no distention and no vomiting and a stethoscope over the area showed a partial relief every four minutes. The physical examination was the same as on previous admissions. Blood count 5,000,000 reds, 100 per cent H., 21,000 W. Urine, negative. He was again operated and a great many adhesions were found attached to the old scar. There is a mass of small intestine agglutinated together over the tumor mass which is much smaller than at previous operations. The scar was excised, the adhesions freed and repaired and about five feet of bowel resected and an end-to-end anastomosis made. A 16 F catheter sutured in proximal end of bowel. Mesentery repaired, removing as much of mass as was possible without injuring large vessels. He had a very stormy time following this procedure, but left the hospital in four weeks in good condition.

He has had many attacks of apparent pain since, but these have not been accompanied by distention or vomiting, and have been relieved by enemata, morphine, or on several occasions by a sterile hypo-

CONCLUSIONS

1. Chylous cysts are extremely rare.
2. They should be borne in mind when difficulties arise in the differential diagnosis of abdominal cases.
3. All cases should be reported, regardless of outcome.
4. Treatment should consist of removal if possible and if not, the more conservative methods.

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ABDOMINAL OPERATIONS FOR FEMORAL HERNIA

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In the literature of the last fifteen years, we have read much of inguinal operations for femoral hernia. Less has been written about femoral operations of the Bassini type, but most surgeons whom I know still prefer that route. In reading and discussion, I have found very little consideration given to the abdominal approach; for that reason a short review of the subject is presented, with reports of two cases treated through abdominal incisions. No new operation is proposed, but certain criteria in the choice of operation are suggested.

In referring to "abdominal" operations, I mean those procedures in which the inguinal canal is not invaded, nor the round ligament (or spermatic cord) touched.

It is accepted *a priori* that some form of hernioplasty is the only satisfactory treatment of femoral hernia, exception being made only in those patients whose general condition makes recovery from any operation questionable, or healing extremely doubtful.

The following is regarded as a good statement of the principles involved in operative repair: (1) Isolation of the sac, (2) reduction or resection of its contents, (3) obliteration of the sac, (4) closure or blocking of the path of recurrence. The first two of these are scarcely debatable. The application of the third is variable, depending on the personal choice of the surgeon and the peculiarities of the individual case, the principle remaining unassailable. The fourth has been the subject of considerable debate. Some believe with Ochsner,[1] Russell,[2] and LaRoque[3] that closure of the femoral ring is quite unnecessary; but I believe a majority of surgeons consider some buffer against the formation of a new sac in the old canal desirable.

Antiquated comparative statistics from French and German clinics seem to argue in favor of closure of the canal; no recent figures on traced cases, treated in both ways, can be found.

The femoral operation (from below Poupart's ligament) is first considered because of its simplicity, especially by those who feel that reduction of the hernia and obliteration of the sac are sufficient for permanent cure. Many clinics point to excellent results from this method.

Objections to the femoral approach center about the dangers in the unusual case: the anomalous obturator artery, the bladder or rectum prolapsed in the canal, the escape of gangrenous structures into the abdominal cavity, or the reduction en masse of a strangulated hernia. Most femoral operations leave a conical space at the ring, or they depend upon some more or less complicated device to obviate this risk, such as Kummer's linen U-suture or Roux's bone staples. When these operations involve any steps beyond excision of a small free sac, and pursestring or other simple sutures to close the canal, they become more difficult and dangerous than inguinal or abdominal operations.

Operating from above gives the surgeon certain advantages, which have been elaborated upon by many advocates of the inguinal approach. Among these advantages are cited: better exposure of the field in releasing adhesions, reducing large or strangu-

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lated herniæ, or resecting gangrenous intestine, also the availability of tissues for plastic repair (aponeurosis, muscle, periosteum). From the journals of the last ten years, one receives the impression that inguinal operations are increasing in popularity. Excellent discussions of the subject have been presented by Kilgore,[4] Edmund Andrews,[5] Cadenat,[6] Northrop,[7] Watson,[8] and Bailey.[9]

The same advantages claimed for the inguinal methods may also be listed in favor of low abdominal operations, with additional safeguards. The inguinal canal is considered the weakest point in the abdomen, when we think of the possibility of post-operative hernia. Through higher incisions this risk seems much less, and the operation is not complicated by the presence of the round ligament or spermatic cord, with the accompanying vessels, nerves, glands and areolar tissue. Loosened sutures, local necrosis, or mild wound infections cause less worry.

The facility and simplicity of the abdominal approach may be appreciated only after its practical use on the living human subject; however, comparatively few writers have even referred to it.

Kellogg[10] recalled that Lawson Tait operated via the transperitoneal route as early as 1889, closing the ring with horsehair sutures.

Savini[11] advocated a suprapubic, midline incision, without opening the peritoneum, with excision of the emptied sac and two catgut sutures to approximate Poupart's and Cooper's ligaments. His operation seems especially applicable to bilateral herniæ. With a unilateral defect, a lateral incision facilitates the work.

LaRoque[3] presented in detail a transperitoneal operation, referring to seven cured cases, some of which presented unusual difficulties. He used a diagonal incision above the hair line on the affected side. The inverted sac was drawn outside of the peritoneum and included in the suturing of the parietal peritoneum. He considers closure of the femoral opening useless, even in cases with enormous defects. William B. Coley[12] criticized LaRoque's attitude on that question, and otherwise regards his technic as suitable only for a case with a large, irreducible hernia.

Cheatle[13] reported a case in which he made a paramedian incision, ligated the sac without opening the peritoneum, and sutured a curtain consisting of a square inch of pubic periosteum to Poupart's and Gimbernat's ligaments. His method of blocking the femoral canal seems inferior to simple suture of the ligaments, as suggested by Lawson Tait and Savini. Many would prefer LaRoque's diagonal incision.

Regardless of technical details, a low abdominal, extraperitoneal approach certainly rivals any femoral operation in simplicity and safety. Opening the peritoneum need not be feared, but it is necessary only in the more difficult cases; and it is in those difficult cases, that the advantages of the abdominal approach are most manifest.

In inguinal hernia, also, abdominal incisions have been given some attention lately. Cheatle's[13] report was chiefly concerning paramedian incisions for inguinal hernia, eight such cases being discussed. Soresi[14] and Banerjee[15] have recently presented intraperitoneal operations for this condition. In two cases, requiring appendicectomy, I have treated right inguinal herniæ from above, with good end-results. However, the only reason for mentioning the subject here is to show that it is undesirable to invade the inguinal canal. Even in attacking inguinal hernia, some surgeons are devising means of avoiding that vulnerable spot.

The complete muscular relaxation induced by spinal anesthesia is an aid in the abdominal operations. Ether and probably ethylene are satisfactory, but nitrous oxide alone would hardly seem sufficient.

CASE REPORTS

Case 1.—A married woman, twenty-seven years old. She complained of menorrhagia, right iliac pain, leukorrhea, and pain after exertion in the region of a right femoral hernia. Three months previously, she aborted at the third month. Two years before, she suffered from thyroidism, following the birth of her only child. This became quiescent after six weeks of rest, with administration of compound solution of iodine.

On examination the tonsils were found hypertrophic, with evidence of chronic infection. Her thyroid gland was moderately enlarged, but her pulse rate averaged only 84, and her basal metabolic rate plus 10. There was tenderness over McBurney's point and on palpation over the hernia, which was easily reducible. Vaginal examination revealed a very relaxed perineum, bilateral cervical lacerations with chronic infection, and her uterus was fixed in a retroverted position.

At operation, under spinal anesthesia (nupercaine 8 mgm.), a midline suprapubic incision was made and the peritoneum opened. An egg-sized pad of omentum was easily withdrawn from the hernial sac. Then, working extraperitoneally, the sac was freed from the femoral canal, excised at the neck, and

two chromicized catgut sutures were passed to approximate Poupart's and Cooper's ligaments. The operation was completed by removal of a kinked, adherent appendix, uterine suspension, coning of the cervix, and perineorrhaphy.

The entire procedure required 110 minutes, including spinal puncture. Of this time, the treatment of the hernia required less than ten minutes. Convalescence was unmarred by any complication, and one year later her condition was satisfactory in every way.

This case illustrates the simplicity of caring for femoral hernia in the course of any clean pelvic or lower abdominal operation.

Case 2.—A pale, emaciated woman, married, thirty-eight years old. After operation three months before for chronic double pyosalpinx, she had a postoperative pneumonia and a subcutaneous slough, the wound finally healing after six weeks. Her operation had been outlined in two stages because of her prolonged low-grade pelvic infection, and poor general condition. This plan anticipated a second operation to include femoral herniorrhaphy, excision of vulvar varices, perineorrhaphy and treatment of chronic endocervicitis.

Her general condition improved sufficiently to permit consideration of the second operation; but, remembering the poor healing of the other wound, I hesitated to use either the femoral or inguinal route. A left paramedian incision was decided upon. The peritoneum was not opened; the sac was released from the femoral canal and found empty. Two catgut sutures were passed to narrow the femoral opening. The sac was plicated and anchored to the pubic periosteum at some distance from its former position.

Spinal anesthesia was used after the method proposed by Romberger[16] (nupercaine 5 mgm., novocaine 60 mgm.). The time of the herniorrhaphy from incision to closure was twenty minutes. The entire operation from the first skin injection to completion of the vaginal work was seventy minutes. There was no post-operative complication, and nine months after operation there was no sign of recurrence.

The indications for the abdominal operation are: (1) In a large, irreducible or strangulated hernia: LaRoque's technic, with modifications to include some gesture to block the path of recurrence; (2) in any case where other conditions indicate exploration of the pelvis or lower abdomen, excluding acute infections: operation analogous to Lawson Tait's or my first case; (3) in bilateral hernia: Savini's suprapubic extraperitoneal method; (4) in recurrent cases, or those in which normal healing may be considered doubtful: the extraperitoneal operation, as in my second case, with either a paramedian or diagonal muscle-splitting incision through the abdominal wall.

SUMMARY

1. At the present time, conservative surgeons may be expected to use some type of femoral operation in treating simple, uncomplicated cases of femoral hernia.

2. In cases where any difficulty may be anticipated, the abdominal operations seem safer, and capable of producing better end-results.

3. Many operators will still prefer the inguinal route. Its practicability has been amply demonstrated. I prefer to avoid the inguinal canal, except in case of co-existent inguinal hernia.

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PATHOGENESIS OF CHRONIC HEREDITARY EDEMA OF EXTREMITIES (MILROY'S DISEASE)

JOHNSON MCGUIRE and PEARL ZEEK, Cincinnati, have studied a characteristic case of hereditary edema of the extremities for several years. They describe the pathologic alteration in the skin for the first time. Microscopic examination revealed a normal epidermis, directly beneath which there appeared to be a condensation of the superficial portion of the dermal papillary layer. With Mallory's aniline blue stain this portion of the dermis had a membranous appearance and was composed of fine collagen fibrils, which in some areas were undergoing hyalinization. No elastic tissue was found in this layer, and there seemed to be fewer capillaries than normal extending into the papillæ. In the reticular layer, the heavy collagen fibers were somewhat spread apart by edematous fluid, but the edema was not nearly so marked here as in the deeper parts. The small groups of blood and lymph vessels, especially those of the subpapillary network, were surrounded by a considerable sprinkling of lymphocytes, which seemed to be more definitely related to capillaries and venules than to arterioles or larger vessels. Although the dermis was widened by the moderate amount of fluid present, there was also a definite increase in the number of collagen fibers, thus producing marked increase in the proportion of dermis to epidermis. The subcutaneous tissue was also much thicker than normal, being composed of large masses of edematous fatty tissue embedded in which were vessels and nerves. In some areas the stroma and fat cells were entirely absent, great pools of fluid being formed with no definite limiting boundaries. A few dilated lymphatics were seen, but much of the fluid occurred in spaces having no visible endothelial lining.—*Journal A. M. A.*

A TRIP TO RUSSIA—AUGUST AND SEPTEMBER, 1931

ROBERT McGREGOR, M.D.†
SAGINAW, MICHIGAN

On August 8 I found myself sailing down the Thames on a Soviet steamer bound from London to Leningrad, with an intermediate stop at Hamburg. Among the passengers were several prominent physicians of London, a group of scientists from Cambridge University and a couple of medical members of parliament—Dr. Salter of W. Bermondsey and Dr. Somerville Hastings of Reading. Life on board a Russian steamer is a unique experience. A fair proportion of the ship's personnel were women employed in various capacities, who were efficient and painstaking in the performance of their duties. One woman was a member of the engine room force, and it is not unusual on ships of this nationality to see a woman officer on the bridge. Three classes of passengers were carried, but the difference consisted solely in the character of the sleeping accommodation, as, in accordance with communist principles, all on board are supplied with the same food. Food was plain, abundant and of good quality, consisting principally of cabbage soup, chicken, stewed lamb, black bread, smoked fish, caviar, cheese, preserved meats and a variety of vegetables and fruits. Tea in tall glasses was obtained at every meal. The captain, who spoke English very well, sat at the head of our table and did his best to promote good fellowship. An interesting feature of every Soviet ship is the "Red Corner," usually a room in the fore part of the vessel fitted up like a parlor, and displaying upon the walls news posters, communistic maxims and pictures of Lenin. Here meetings are held nightly and matters discussed affecting the interests of the crew. Upon a permanent committee devolves the duty of investigating disputes or any unjust treatment on the part of the officers. Should an officer prove obnoxious to the men he is liable to be laid off at the home port. As a consequence, the relations between officers and men are marked by noticeable courtesy and there is an entire absence of the swearing and calling down so common on British ships.

Following a stoppage of thirty-six hours at Hamburg, we sailed down the river Elbe to the Kiel Canal, through which we passed to the Baltic Sea. Three days of sailing thereon brought us to the Gulf of Finland, down which we ploughed our way for twelve hours and arrived at Russia's greatest seaport, Leningrad, on a beautiful Sunday morning. Rumor had it that the examination by Soviet officers on landing was something of an ordeal, but it proved to be really less vexatious than that of entering either France or England. As soon as the steamer was moored the passengers proceeded to a large room on the dock provided with comfortable chairs and with cut glass decanters of water and numerous clean glasses on a table. An official stood at the door of an adjoining room into which we were called one by one. My turn came after an hour of waiting. My passport was examined painstakingly and my baggage rather cursorily. Only one question was asked, "How much money, foreign or Russian, have you?" It appears that the importation of Russian roubles is forbidden under a penalty of three years' imprisonment. It has been possible to buy roubles in Berlin at the rate of ten for a dollar, whereas everywhere in Russia the rate is inflexibly maintained at only two for the dollar. When foreign money is exchanged at a bank or other official place in Russia, a slip is given showing the amount of roubles purchased. When roubles are paid out for any purpose, the dealer must record the transaction on the back of the slip. Before a foreigner is allowed to leave the country the slips are examined by an inspector. If it should appear that more roubles were expended than received in exchange, then trouble is in the offing. The formalities of admission were soon over and within five minutes I was in a motor coach speeding to the Hotel de l'Europe. Here a comfortable, well furnished room was secured at a very reasonable figure. The reasonable rates for the rooms,

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however, do not extend to the dining hall, where everything is à la carte. A dinner consisting of soup, roast beef, potatoes, salad, rice pudding and tea came to about four dollars. There are only two hotels in Leningrad to which foreigners may go and both are conducted by the government, as are hotels everywhere throughout Russia.

It is not an easy matter to get lost on the streets of Leningrad for they run in straight lines and cross at right angles, in contrast to those of Moscow, which are narrow, winding and crooked as can be. The principal street is the Avenue 25th October, formerly the Neva Prospect. The crowds on the streets resemble those seen on Second and Third Avenues, New York City. There are no idlers, or crowds on street corners, but everyone hurries along as if bent on a definite mission. A large percentage of the people appears unwashed, for soap is scarce and expensive in Russia. The shoes of many, too, are much down in the heels, for the government factories have been unable to turn out enough to go around. The shops are all drab affairs, with grimy windows and an absence of window display. There are no privately owned stores—all are government owned, and tickets are required to obtain anything except in one or two special stores exclusively for the accommodation of foreigners. In these special emporiums, "Torgsin" or "Universal stores" as they are called, everything that a foreigner requires can be obtained at fairly reasonable prices. Cigarettes are both cheap and good—one hundred for about a rouble and a half. I was never able to obtain a cigar anywhere in Russia for less than one rouble. Cigarettes are of home manufacture, whereas cigars are imported.

In all Soviet towns the streets are paved with cobblestones. The sidewalks as a rule are deplorable, with breaks here and there as if a ton of metal had dropped upon them. In Leningrad, as in most Russian cities, there are many small parks, attractively arranged with a profusion of flowers and ample seating accommodation. A special effort is being made, by such creations, together with art museums and people's palaces, to raise the cultural level of the people.

The Seventh Day is no longer a day of church-going or of suspension of labor. A Sunday ramble through Leningrad showed that church bells are silent and churches, big and little closed. Some were used as storehouses, others as museums and a few as schools. One great church, that of St. Isaac's, was being used as an anti-religious museum. On its walls were huge posters showing that various phenomena were due, not to Providence, but the operation of natural laws. Tableaux of wax figures were an important part of the exhibit. One group showed over-fed priests taking tithes from poor, emaciated folk. Another conspicuous spectacle was the Pope of Rome and the Archbishop of Canterbury blessing cannon and soldiers going forth to war. The eclipse of the Russian Orthodox Church is well-nigh complete. Many beautiful edifices are being demolished to make way for commercial or other structures. In Moscow I witnessed the demolition of the great, golden dome of the "Church of the Redeemer," one of the most magnificent churches in all Christendom. Six charges of dynamite subsequently destroyed the building. This temple had been erected at a cost of fourteen million roubles to commemorate the retreat of Napoleon from Moscow.

The Soviet government is avowedly atheistic and believes in the dogma of Karl Marx that "Religion is the people's opiate." It forbids religious instruction in schools and requires that pupils be taught that God is a myth and that religion of all sorts is founded upon superstition. Many of the older members of the community view the situation with much bitterness of spirit, while the younger element is rapidly adopting the government's viewpoint. It is a curious thing to see an aggressive body of three million communists controlling the destinies of Russia and dominating the spiritual aspirations of 160 millions of people.

In spite of government impediments and legal restrictions it must not be supposed that Christianity is doomed in the land of the Muscovites. The base may perish but the sterling sort survive. In many Russian homes I have seen the wife with her altar and crucifix and the husband, a dyed-in-the-wool atheist, with his Lenin corner and communistic shibboleths. Since the Revolution there has been remarkable growth among the Sectarians. The Baptists have multiplied about threefold and are the strongest among the sects. They are especially strong in south Russia, and number about four million adherents. Proselytism is rigidly prohibited. It is the one country in the world where the Salvation Army has not pene-

trated. It is also forbidden to maintain a religious library in any church or to give religious instruction to young people under the age of eighteen. Several months ago the Baptist Synod sought permission from the government to import 25,000 Bibles, but the commissariat for education held that 2,500 was enough.

The foreign medical man in Russia has little trouble in visiting medical and scientific institutions. In most instances his personal card has all the force of a note of introduction. An interesting time was spent in Pavlov's laboratory. Professor Pavlov is a Nobel prize-man. Notwithstanding his eighty-two years, he still carries on experiments along the line of conditioned reflexes and the effect of various emotions upon gastric secretion. In one very large room it seemed as if half the dogs in Leningrad were gathered there. The esophagus of each had a slit six inches long, closed at the distal end. The dogs were industriously consuming pieces of liver and pancreas which, however, passed through the slit and returned again to the feeding pan below. To a container ran a tube from the stomach along which was conducted the gastric secretion, more or less intermittently. The effect from the various foods and excitations is carefully ascertained. After refinement and gauging of digestive power, the secretion is bottled and distributed to hospitals for therapeutic testing. A sip of the finished product sharply whetted my appetite for the next meal.

The largest hospital in Leningrad is the Metchnikoff with 2,000 beds. When I was introduced to the superintendent at the administrative building I at first thought he was the engineer or a janitor, for he was garbed as a worker with soiled smock, unpolished shoes, unshaven face and without a collar. Right here is one of the outstanding features which distinguishes the new from the old Russia. Everywhere one finds at the head of institutions and industrial concerns men who have risen from the ranks of labor, for the workers are today the peers of the land. The superintendent of the Metchnikoff Hospital proved to be a kindly disposed man, of good intelligence and eager to show every courtesy. Under the guidance of an orderly every part of the hospital, which consists of four or five detached buildings, was visited. In a Russian hospital there is almost an entire absence of private rooms. Wards of fifteen or twenty beds are the rule. Scrupulous cleanliness prevails everywhere, but the visitor on entering a ward is impressed with the general untidiness of the beds. This is because the nursing service is conducted on a somewhat restricted plan. Beds are not made every day but the patient straightens things out as best he can. Where physically and mentally able to do so, he attends to his own toilet, a basin of water being brought in every morning. On a small table at the head of each bed are the medicines, which the patient takes himself at the proper times. The surgical operating rooms are splendidly equipped and the technic and skill of the surgeons of a high order. The various laboratories are staffed with earnest and efficient workers. Much attention is paid to X-ray work and light treatments. The apparatus employed is extremely complete and modern, most of it being German importations. The hospital possesses 600 mg. of radium, but opportunities for its beneficent use are infrequent because of the advanced stage of the disease when cancer cases are admitted.

The Belinski Hospital, Leningrad, is fairly representative of Russian asylums for the mentally afflicted. Its inmates are the usual run of dementia precox, senile dementia, paralytic dementia and manic depressive psychoses. A tour of the institution made it painfully evident that the government does not give the same consideration to the care and welfare of the insane as in other lines of social service. The building is very old. The halls, rooms and corridors are extremely bare and gloomy, unrelieved by any display of color or adornment. Many of the patients were not overly clean and some rather scantily attired. There are only 40,000 mental hospital beds in Russia to care for the needs of the population of 160,000,000. The annual number of applicants is nearly double the accommodation. The custom prevails to a large extent of boarding out the surplus in private homes.

One would search in vain in a Russian city for a doctor's shingle. Health and disease are responsibilities of the state and therefore all doctors are state employees. One or two are allocated to particular districts containing from one to two thousand inhabitants. The average salary is one hundred dollars per month, ranging from 15 per cent below to 15 per cent above that

figure. A Billings or an Osler would not get more in these communistic days. There is no incentive for a doctor to save money. He cannot send it out of the country, he cannot invest it in property or industrial concerns, for the government owns all and runs all. All sorts of workers have their unions. The doctors, too, have theirs, "The Medical Workers' Union," which includes not only the doctors but nurses, the doctor's chauffeur and even the hospital laundry workers. A doctor may abstain from joining his union, but if he does he will suffer in various matters of preferment. All food is rationed and obtainable by a system of cards graded "A," "B," and "C." An "A" card calling for food superior in quality and quantity is given to the unionist, while the non-unionist has to be content with the coarser ration of the "B" or "C" card. The ration, of course, must be paid for as the right to it only is granted. Again the unionist on reaching a certain age becomes entitled to a pension. Depending upon the circumstances of his employment the doctor may have free living rooms with light and heat.

In the various Soviet cities there are fifteen medical schools. The students are all specially selected and obtain free tuition and an allowance from the government for board and lodging. About 40 per cent of the students are from the peasant class. The diseases most rife in Russia are tuberculosis, malaria, typhoid and typhus fever.

From Leningrad to Moscow is 416 miles. A splendid train—the "Red Arrow"—leaves daily at midnight, arriving at 10:30 A. M. Moscow is a bit larger than Leningrad, but for muddy streets and shabby buildings it is unequalled in Europe. Street cars and buses afford congested transportion and there are taxicabs and droskies which are but relics of better days. The drivers of the latter know how to charge and ask from five to ten roubles for a trip of two miles. There are only two fairly good hotels for foreigners —the Grand and the Metropole.

Moscow has three hospitals on a par with the Metchnikoff in Leningrad. Clinical institutes and institutes devoted to preventive medicine are scattered through the city. One particular institute is unique in its way. It is called the "Institute for the Succor of Women." Here a woman not over three and a half months pregnant may be relieved free of charge. She must first, however, obtain a permit from a special officer, for the penalty for unauthorized abortion is one year's imprisonment. Armed with her permit she enters the institute one day, is operated on the next and goes home on the third day. Sixty cases are treated each day from 11 A. M. till 2 P. M. Five doctors work with extreme rapidity and in most cases no anesthetic is given. The *modus operandi* is to draw down the uterus by traction on the anterior cervical lip. The cervical canal is moderately dilated. With a blunt curette the uterine contents are deftly removed, a little packing is done and the patient returned to the ward. Over the entrance to each ward is the intimation, "You are welcome on this occasion, but do not trouble us again." Nevertheless, there are many repeaters. The mortality rate is one in 10,000, chiefly from uterine rupture or septic peritonitis.

Interest in the administration of Soviet justice led me one day to visit the "People's court," which deals with all lesser forms of crime as well as civil actions. Entering the court room I took the only available seat, which was on a form down in front, and which I learned later was specially reserved for prisoners. No notice was taken of me, however. On a slightly raised platform were the judges—two men and one woman, this combination being the rule in all such courts. As is customary, the judges were members of the working class. The woman might pass for a laundry hand, one of the men for a bricklayer and the other for a cobbler. The woman did most of the talking, and her speech was sharp and incisive. As is the rule, no police or other officers were in attendance. The man sitting next to me was presently called up. He was accused of pilfering from a store of which he was the manager. He made a stammering defense. Two witnesses were examined. The judges then retired to a side room. In ten minutes they returned and the woman addressing the accused announced that he was adjudged guilty and would spend one year in prison. He was then given a card which directed him to go to a particular prison. He is first permitted to go home, arrange his affairs and the next day or the day after report at the prison and begin his sentence. No one ever attempts to escape, for every individual is registered and the usual rationing of food automatically stops after conviction.

From Moscow the favorite trip of most

visitors is a voyage down the Volga—the "Main Street" of Russia. An overnight journey takes one to Nihzi Novgorod, at the head of navigation. Here one may take a steamer for a five days' sail of 1,500 miles, to Stalingrad. The Volga steamers are built on the same pattern as Rhine steamers, but half again as long. They are usually overcrowded with a motley concourse of natives of all ages, and the sleeping quarters are overrun with bedbugs and cockroaches. Outside of atrociously cooked food and doubtful water, the steamers are not altogether lacking in comfort. On the upper decks are a profusion of easy chairs, and on the steamer on which I had passage—the "Turgeniev"—was one of rich upholstering especially made for the czar when he took the Volga trip in 1913. The scenery along the Volga is rather monotonous—low sandy shores on the left, moderately high ground on the right. The river varies in width from 400 yards to two miles, and is extremely winding. There are interesting towns along the way such as Karzan, Samara and Saratov, where the voyager may have at least a couple of hours ashore. In no other way can one gain such an insight into Russian conditions as along this great artery of a nation's life and commerce. Factories may be visited where tractors, automobiles and other products are produced. From personal observation of the output of factories and the enthusiasm of the workers. I am convinced that the aims of the five-year plan will be amply achieved. In the lower Volga, and in the Valley of the Don, one may visit great collective farms where thousands of acres are under cultivation and an army of men and all kinds of machinery are employed.

The traveller along Muscovite highways must needs keep a watchful eye on his belongings for nowhere in the world have I seen such numerous and audacious pilferers as exist along the Volga. It would be wrong to say that the propensity to steal is a trait of the Russian character. The malefactors are undisciplined youths who prowl in gangs from one end of the country to the other. The typical worker or peasant is as a rule honest. He has some of the characteristics of the sons of Erin, inasmuch as he is open handed, friendly and uncommonly ready to be of service. He gives you his confidence easily and will talk volubly about himself, his family or his interests. He is as unsophisticated as a child, yet he can manifest a certain stoicism and bear changes in fortune unflinchingly.

The longest railroad trip undertaken was from Stalingrad to Moscow, a journey of thirty-six hours. On Russian trains there are but two classes—hard class and soft class. In the former the seats are bare boards and the rate cheap, about one copeck, or half a cent, per mile. In the latter the seats are upholstered and on long distance trains the car is divided into compartments, each having two berths. There are, as a rule, no dining cars, but at the various stations one may purchase from peasant women roast chicken, hard boiled eggs, black bread, cheese and apples at absurdly low prices. At important stations, too, there is always a tank of hot water with which to make tea. It often happens, as it did to me, that a man and woman will be billeted together in one compartment. In Soviet land the line between the sexes is not sharply drawn. There is a rare spirit of comradeship between men and women that is entirely impersonal. The women enjoy the same political and social privileges as the men and revel in the fact. They are practical minded, dress plainly and make no effort to enhance their personal charms. They are never consciously immodest and not less virtuous than the women of other lands.

In due time I stood once more on the dock at Leningrad, homeward bound. The inspector who had my fate in charge was a woman. She had a particularly hard face and a look of grim determination. She spent nearly an hour examining everything I had in my baggage. She set aside, bit by bit, some printed matter until I felt that counter-revolutionary evidence was piling up against me. Finally she got hold of something she did not quite understand and looked up into my face inquiringly. I gave her my most engaging smile. She, too, smiled and for the moment became feminine. Then, as if acting on a sudden impulse, she stamped my passport, swept everything into my bag and I was free to go on board the steamer.

The question is often asked, "Can the Soviet system endure?" My belief is that it is too strongly entrenched to be easily uprooted. The vast extent of the country is its greatest safeguard. No single nation is powerful enough to overrun it. In a con-

test with Japan, Russia would stand to lose Vladivistok and a section of Siberia, because of the necessity of transporting men and munitions over a single track, 5,000 miles long. In such an event Poland and Rumania, who have deep-seated grudges against the Soviets, might be tempted to attack in the rear, backed perhaps by France. What the government most fears at the present time is intervention by a group of capitalist countries, bent on stemming the advancing tide of communism. Schisms in the ruling clique, leading to a more liberal policy, are among the possibilities of the future.

MICHIGAN'S DEPARTMENT OF HEALTH

C. C. SLEMONS, Dr.P.H., M.D.,
Health Commissioner
LANSING, MICHIGAN

COMMUNICABLE DISEASES

According to expectancy based on past behavior of incidence, measles is exceedingly prevalent throughout most of the state. The incidence began to climb in the latter part of February when some of the western cities and counties of the state had a rather sharp outbreak. The total number of cases for the state continued to increase slowly until about the middle of March. There was then a rather sharp uprising in the trend and by the latter part of April the number of cases had increased to approximately 2,000 per week.

This is based on the number of reports and it is quite evident that there are many cases that do not come to the attention of a physician or to the knowledge of the health officer. We cannot at this time say what the number of deaths due to this cause will be. There has been quite a call for the sodium citrate solution which is furnished by the Michigan Department of Health in connection with the administration of whole adult blood for the prevention and modification of measles.

Scarlet fever incidence has continued quite high. In February, 1,959 cases were reported for the state. In March this number rose to 2,056 and in April there were 1,823 cases. This is more than twice the mean of the last five years during April. For the most part, the cases are mild, although there appears to be some indication in certain districts, notably in Detroit, of a slightly increased virulence.

The incidence of diphtheria is remarkably low. The number of cases reported for 1931 was 1,831. This is far below the lowest previous record. For the first four months of 1932, the number of cases reported is 565. This is to be compared with 683 cases for the same period last year. If this incidence continues, 1932 will see a new low mark established.

Smallpox has been exceedingly low throughout the winter months, and during April there were only 27 cases. Practically all of these cases have been in the southwestern section of the state. Because of this low incidence of smallpox it is difficult to impress people with the importance of vaccination. Needless to say, if we do not keep up our number of vaccinations, we may expect the rate to greatly increase at some time.

The outbreaks of typhoid fever referred to in previous issues of the Journal in Bay City, Monroe, Yale and Flint have all subsided. These outbreaks have increased the number of cases for the winter months somewhat above the average for the last five years. Cases now being reported are less in number than usual.

C. D. B.

NEW REGULATIONS FOR ISOLATION AND QUARANTINE

The State Council of Health at its March meeting adopted minor revisions of the rules and regulations for the control of communicable diseases. The regulations as amended are being printed and distributed to all health officers and will be in effect as soon as this distribution is made. Physicians having cases of communicable diseases should ascertain from the health officer whether their cases are affected any by the new regulations.

C. D. B.

NEW BIOLOGICALS

Rabies vaccine is now being distributed without cost by the Michigan Department of

Health. Health officers in the larger centers will be supplied with an emergency package of this material at all times. The vaccine is put up in packages of seven doses each and for the ordinary case, 14 doses at daily intervals are advised. It is not necessary nor is it wise to treat with rabies vaccine every person who has been bitten by a dog. It is far better, if the dog in question is known and can be put under observation, not to start antirabic treatment unless the dog shows some indication of rabies. The Michigan Department of Health desires a report from every physician who uses rabies vaccine supplied him by the state.

Old tuberculin for the von Pirquet and the Mantoux test will also be supplied without cost at an early date, by the department. This will be sent on request to any physician.

C. D. B.

CHILD HYGIENE ACTIVITIES

The series of Women's Classes in Ottawa County conducted by Doctor Alexander has been completed, and a similar series of classes has been started in Wexford County. Doctor Alexander will be assisted by Helen Linn, R.N. Doctor Edna Walck, successor to Doctor Muriel Case, began a series of Women's Classes in Clinton County on Monday, April 25.

A Breast Feeding Campaign is being conducted in Leelanau County by Nell Lemmer, R.N. Miss Lemmer will remain in the county about two months.

Julia Clock, R.N., is assisting Martha Giltner, R.N., in her prenatal program in Berrien County.

Child Care Classes are being completed in Kalamazoo and Monroe Counties and the two nurses who are conducting these classes, Beatrice Ferriby, R.N., and Bertha Cooper, R.N., will carry on a Breast Feeding Survey in Montcalm and Tuscola Counties, respectively.

Esther Nash, R.N., is in the northern part of the state arranging the schedules for Women's Classes and making preliminary arrangements for Child Care Classes in schools next fall.

FAMOUS MEN IN MEDICAL HISTORY

VICTOR C. VAUGHAN

By CHARLES H. McINTYRE

Late in the afternoon of a beautiful September day, some fifty-five years ago, two young Missouri farm boys alighted from the train at the old Michigan Central depot in Ann Arbor. Imbued with the desire for scientific training and induced by Douglas and Prescott's text on Qualitative Chemistry, one of these boys, Victor Vaughan, came to Michigan interested primarily in Chemistry; the other, Edward Samuel, contemplated entering the Pharmacy school. After dining and spending an evening at the old Cook house which has later become the Allenel, they doubted the wisdom which led the authorities to select Ann Arbor rather than Detroit as the seat of the University. Early the following morning they walked East on Huron Street and approaching State their spirits rose; they were becoming impressed with the beautiful fall landscape which has made Ann Arbor famous. Arriving at State they turned South and after a two blocks' walk came to an area of forty acres surrounded by a high picket fence which was sensed to be the campus, though the outlook was far different than we see today.

Young Vaughan was certain that he was to work in the chemical laboratory but he further was desirous of entering the graduate school to secure a higher degree. On visiting President Angell's office and after mistaking which of the two men in the office was the president he was introduced. Vaughan soon found that his diploma from Mt. Pleasant College, back in Missouri, was not recognized by the University and his fate as to doing graduate work was left in the hands of Professors Prescott, Harrington and Hilgard of the departments of Chemistry, Biology and Geology. Prescott readily gave his approval, Harrington refused and Hilgard was yet away on his vacation. Knowing that Hilgard was his

only hope and that mineralogy was his great weakness Vaughan procured a half bushel of potatoes and with the aid of Dana's Mineralogy cut out the shapes of all crystals therein described. The day subsequent to Hilgard's examination Vaughan became the student assistant in geology and so continued for the remainder of the year. Late in the year he wrote a thesis entitled "The Separation of Arsenic and Antimony" and in June was granted the degree Master of Science. In the fall of 1875 he continued the same graduate work as a candidate for the degree Doctor of Philosophy. Incidentally this was the first time that this degree was offered "in course" at Michigan. Three theses were composed during the year, one on the separation of Arsenic and Antimony, another on certain fossils found in the region of Ann Arbor, and the third entitled "The Osteology and Myology of The Domestic Fowl." Dr. Vaughan writes:

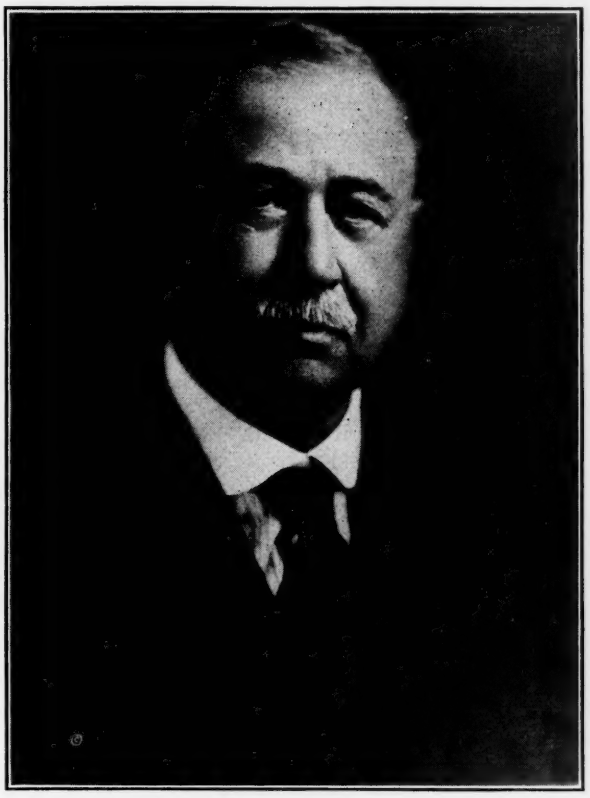
"An Ann Arbor bookseller, S. C. Andrew, somehow acquired an insane idea that he could publish this last thesis in book form and make money. I, having no illusions, gave him a copy of the manuscript. Andrews never confessed to me how much he lost on the enterprise. It made a neat little volume, some copies bound in green, others in red. He sold at least two copies; I know this, because I bought them though I never dared show them to anyone."

The degree, Doctor of Philosophy, was granted in June, 1876. In December, 1875, a storm had broken loose in the chemical laboratory over a financial matter, involving Drs. Douglas and Rose. Though the men were never convicted of any charge both were discharged and Vaughan was made instructor in Physiological Chemistry. He states that he always looks upon his first appointment to the teaching force of the University as due to a regrettable and sorrowful affair. Dr. Rose was very popular with the students and Vaughan looked forward to his first meeting of the class with some dismay. He states:

"I wrote enough on the function and structure of the kidney to fill many hours. When I stepped upon the rostrum there was neither applause nor hissing; without prelude I began. When I closed the walls rang out with approval and the crowd filed out, singing 'He's a jolly good fellow.'"

Vaughan entered the Medical school in the fall of '76 and was granted his degree in 1878. During these two years his work in chemistry was continued and in 1878 he put in book form the lecture notes in Physiological Chemistry, this book passing through three editions in as many years.

At about this time the medical school was greatly agitated by legislative attempts to engraft homeopathy upon its teaching. Finally the legislature made all University



VICTOR CLARENCE VAUGHAN

appropriations contingent on the establishment of a full homeopathic school, quite independent of the Medical school in the University, and provided a special appropriation for that purpose. The legislature held the purse strings and the new school opened its doors in 1875. Dr. Vaughan states, "I never objected to the establishment of the homeopathic school or its maintenance in the University. In fact I looked upon it as an experiment and held that if scientific medicine could not successfully compete with sectarianism, it deserved to fail. There can be but one Medicine. Medical cults are all parasitic growths and must fail in the end."

In 1877 Vaughan was recommended for promotion by Dean Palmer. The Board sent back the charge that Vaughan was guilty of atheism. He sent back this reply, "Tell the board that I decline to make a confession of faith to them. This position concerns the

teaching of science and has no relation to religious belief." The Regents discussed the matter at odd intervals for two days and sent back a request to the faculty that they recommend another man to teach histology, but the faculty returned the name of Vaughan each time. In the fall another man was appointed to teach histology. In the summer of 1877 Vaughan lectured at the summer session of the Normal school in Westchester, Penna. Following this he went to Missouri and was married to Dora Catherine Taylor. Dr. Vaughan was promoted to the position of Assistant Professor in 1880, and for the next three years his duties were divided between the Chemistry department and the Medical school, but even after his appointment in 1883 to full professor of physiological and pathological chemistry, his working quarters remained in the chemical building. The promotion to the professorship in 1883 came at the time when Dr. Vaughan was likewise serving as Associate Professor of Therapeutics and Materia Medica. In 1887 the titles were changed to Professor of Hygiene and Physiological Chemistry and Director of the Hygienic Laboratory. As early as 1877 it was realized that the present quarters were not adequate for studying the special problems of health and disease in which Vaughan was interested. With the coöperation of the State Board of Health the legislature of 1887 appropriated $40,000 for the erection of a building to be jointly used by the Hygienic Laboratory and the Department of Physics. As stated at the time the purpose of the Hygienic laboratory was, first, to study the causation of disease; second, to make analyses of food and drinking water, and, third, to teach the causes of disease. It was soon evident that the new science, Bacteriology, could not be thoroughly applied in this laboratory unless a first hand knowledge of the new methods was acquired. Accordingly Dr. Vaughan spent the summer of 1888 in Koch's laboratory, under the direction of Carl Fraenkel. The laboratory was completed in 1889 and was the first in the country which systematically taught Bacteriology.

Vaughan was rapidly manifesting a great interest in building up to a high level the faculty of the Medical School and when in 1888 an independent chair of Physiology was created, the selection of the man to fill this chair was largely left to Vaughan. Through his work in Physiological Chemistry he was in touch with the progress of Physiology and strongly urged and secured the appointment of Henry Sewall, who proved to be an inspiring teacher. With the death in 1887 of Dean Palmer, Doctor Ford nominally became Dean but the actual administration was left largely to Vaughan. Dr. Vaughan had suggested that the length of training be increased and in 1877 the annual session was extended from six to nine months, another year was added in 1880 and a fourth year in 1890. Good-naturedly Dr. Ford had replied to the plan, "Have your way but I look forward to the time when, on giving my first lecture, I will begin 'My Dear Sir,' since there will be only one student on the benches." Needless to say, there was no decrease in the number of students. With the increase in time required for medical training there was likewise an increase in the entrance requirements and by 1890 a diploma from an approved secondary school was demanded. In 1892 certain prescribed subjects were demanded in addition to a diploma from a secondary school. This progressive increase in requirements culminated in 1909 in two years or sixty hours of collegiate work. Dr. Vaughan became Dean on the death of Dr. Ford in 1891, and it is during the following ten years that his services to the school were of the greatest importance, for in 1891 there were seven vacant chairs to fill. It is seldom that a new Dean has the opportunity to select a faculty to suit his own ideas and the selection of new men largely predicted the future history of the school. John J. Abel became the Professor of Pharmacology and was succeeded in 1893 by A. R. Cushny, Charles De Nancrede was appointed to Surgery, George Dock to Medicine, William Howell to Physiology, James McMurrich to Anatomy, Fleming Carrow to Ophthalmology and Paul C. Freer to General Chemistry. The medical faculty in the 90's was perhaps unsurpassed in this country or abroad and, as Dr. Vaughan jokingly puts it, was a full time faculty on less than half time pay. Having secured an excellent faculty Dr. Vaughan's next endeavor was to see that each member had the best possible facilities demanded by his work and then to let him alone.

At about this time there arose the ques-

tion which then and has since been much disputed, concerning the utilization of the clinical facilities of Detroit. Dr. Vaughan states:

"The University of Michigan Medical School was from the start a scientific in contradistinction to a practical or clinical institution. This was not altogether due to preference on the part of its founders but was a necessity. For twenty-five years it had no hospital—not a building which by any stretch of imagination could be so denominated. As late as the 80's one of the graduates urged me to leave the school, arguing that the school must fail on account of its lack of clinical opportunities, but I saw the argument from another angle—the deficiency in the city schools at that time in scientific training. I have always insisted that the connection between a Medical School and its University should be real and vital and not simply a paper one."

Dr. Vaughan first asked the legislature for an appropriation for a new hospital in 1890, and it was largely through certain undignified opposition that the request was finally granted and the clinical facilities greatly bettered. As a result of Dr. Vaughan's further interest an appropriation in 1915 started the way for the present new University Hospital. Indeed it must be acknowledged that all the appropriations for increase in medical facilities between 1890 and 1921 are indicative of Dr. Vaughan's interest. The graduate work in the school was likewise encouraged in every way by Dr. Vaughan; soon after becoming Dean he obtained permission from the Board of Regents to enroll physicians and others in the laboratory courses on the payment of a small fee. The Medical library which the University boasts is largely a result of Dr. Vaughan's early belief in the necessity of a working library. Dr. Vaughan has said, "A medical school without a good research library is like an automobile without gasoline; it will not go. The library is one of the strongest ties that has held me to the University when higher financial rewards tempted me to go elsewhere."

Dr. Vaughan was retired as Dean of the school with the title of Professor Emeritus, in 1921, having served thirty years as Dean and having been connected with the University for a period of forty-six years. President Ruthven has stated, "His service was the maximum one that a member of the staff can render. Dr. Vaughan's monument is a medical school which has few rivals for its output of scientific contributions and men of marked ability as scholars and practitioners." Dr. Vaughan was instrumental in the founding of both the Research and Scientific clubs here on the campus, and unless absent from the city he rarely missed a meeting of either of these organizations. It is said of him that he always brought to the clubs a never failing good cheer, a fund of humor and a wealth of stories out of his varied experiences. Dr. Hobbs said of these meetings, "Here as nowhere else this group of colleagues came to know and love the man of high ideals, of generous impulses, of straightforward methods, and of keen interest in his fellow workers, both in the University and throughout the country."

VICTOR VAUGHAN AS A TOXICOLOGIST, MEDICOLEGAL EXPERT AND IMMUNOLOGIST

The real foundation of Dr. Vaughan's success as a toxicologist and a medico-legal expert perhaps lay in his early and extensive experience as a teacher, first of Latin, then of chemistry (eight years), medical chemistry (one year), physiology (three years), physiological and pathological chemistry and Materia Medica (four years), and finally as director of the hygienic laboratory and professor of hygiene and physiological chemistry for twenty-two years. Dr. Vaughan was the true exemplification of the vigorous and conscientious student attempting to work out and master every detail of the chemical, toxicological, physiological and pathological problems which he attempted to present to his classes. His knowledge of toxicology was undoubtedly greatly increased by the great numbers of experiments which he performed, either for or with his students each year. "Cautious and always extremely critical of his own work, widely conversant with the literature and stimulated by his many associations with able colleagues and eager students, Dr. Vaughan used these experiments as the foundation upon which he arose to the highest pinnacle as a toxicologist and medicolegal expert." The rôle played by pathogenic bacteria in many epidemics and in food poisoning was far from understood in the earlier years of his work, in fact the "germ theory" of disease was by no means universally accepted. Consequently much of the work done in Dr. Vaughan's laboratory was devoted to clearing up the hazy relations existing between true chemical poisoning and that poisoning due to living bacte-

rial organisms. With the first work of arsenic previous observations were confirmed, namely, that arsenic will diffuse from a localized point throughout all the tissues of a dead and buried body. As a result of these observations laws were enacted prohibiting the use of arsenic in embalming fluids and demanding greater care on the part of druggists in dispensing poisons. While yet a comparatively young man Vaughan's reputation along these lines became widespread and the demands for his services were continual. It should be acknowledged that Dr. Vaughan never accepted service in such a case unless the claims on his side had scientific justification. In his *Memoirs* Dr. Vaughan states:

"My experience as a medico-legal expert has been confined almost exclusively to those cases in which poison is supposed to have played a part. I know nothing about other branches of legal medicine or expert testimony. I admit, now that I am through with all this, that but few experiences ever gave me greater thrills than came from cross examination by a bright lawyer. In such instances I only hoped that my antagonist would fight fair, but if he should strike below the belt I generally managed to deliver my thrust at a like part of his anatomy. There is no other state in which my brain remains so clear and acts so promptly as when I am in the witness chair."

In the year 1885 Dr. Vaughan arrived at the conclusion that he had found in poisonous cheese a new chemical compound depending on bacterial action, to which the name "tyrotoxicon" was given. Strenuously he strove to isolate this poison in pure form but with the passing of years it is now realized that such a pure chemical compound perhaps never existed.

"Vaughan was working at a time when the conceptions of bacterial toxemia were dominated by the belief that the poisons involved in infectious processes were produced by the putrefactive and fermentative actions upon the proteins of the body. Vaughan and Novy studied not only the ptomaines themselves but sought for similar substances in cultures of pathogenic organisms. They isolated from mixed cultures of typhoid stools a poisonous base which was obtained as a crystalline salt and which produced purging and temperature elevation in cats and dogs. Similar substances were obtained from a number of other bacteria. This work led logically to biochemical investigations of food poisons; studies which contributed not only to a better understanding of the toxic protein derivatives themselves but had an important and beneficial effect upon the development of methods of food preservation."

"Vaughan's work in the demonstration of a toxic constituent, chemically separable from the bacterial body, with which acute death could be produced in guinea pigs similar symptomatically and physiologically to anaphylactic death, had an important effect on the reception of the relatively recently observed anaphylactic phenomena."

His book upon this subject in 1913 also includes the ideas upon protein fever which have now become an important link in the chain of our knowledge concerning the development of idiosyncrasies. The list of publications dealing with the work on toxicology and immunology is indeed long and Dr. Vaughan contributed extensively to various medical systems on the material in this field. The work on cellular toxins published by Vaughan and Novy in 1902, that on leukomaines and ptomaines and the later publication entitled, *"Protein Split Products,"* are prominent in the list.

DOCTOR VAUGHAN'S WORK IN EPIDEMIOLOGY AND PUBLIC HEALTH

That Dr. Vaughan was versatile, there can be no doubt. Perhaps we may say that his second greatest interest was in public health, assuming that the destiny of the University of Michigan Medical School remained foremost in his mind. Dr. Vaughan, through his own personal efforts and through his teaching to the thousands of his pupils and followers, has probably done more toward forwarding the relatively new field of Preventive Medicine than any other man in this country. The first indication we have of Dr. Vaughan's interest in public health and hygiene was in the late 70's, when he became intensely interested in popular health instruction and how it might be disseminated in terms understandable by the laity. In the early 80's the State Department of Health began sponsoring sanitary conventions to study ventilation, water supply and smallpox vaccination; in 1882 Dr. Vaughan was elected Secretary of one of these conventions which was held in Ann Arbor. Dr. Vaughan was appointed a member of the State Board of Health in 1883 and served continuously, much of the time as President, until the board was abolished in 1919. An early interest in food and water pathology is evidenced by the fact that he served as chairman of two important committees, one on Food, Drink and Water Supply, the other on Poisons, Chemicals, Accidents and Special Sources of Danger to Life and Health. In 1883 Dr. Vaughan became a member of the American Public Health Association, and was soon actively at work, under the supervision of Major

General George Sternberg, studying the relative germicidal value of the various substances used as disinfectants, this being done since there was anticipated a visitation of cholera in the near future. In 1886 Dr. Vaughan contributed the prize winning essay entitled "Healthy Homes and Foods for the Working Classes." During the next three years the new hygienic laboratory was being constructed, and in this interval Dr. Vaughan published model diet tables for use in typhoid fever—there were at the time about 10,000 cases of the disease in this state each year. The objective of the new hygienic laboratory has already been discussed and the first problem confronting the staff was the analysis of drinking water from the areas where typhoid was most prevalent. Samples were studied carefully and in the period of one week reports on each sample were submitted. The epidemiologist of 1888 had many sad experiences attempting to convince the layman that the drinking water harbored the cause of the prevalent typhoid fever. Dr. Vaughan frequently told the story of the well used by his neighbors, the water from which he declared unsafe after several cases of typhoid had developed in the household, and how he had boarded and nailed up the opening and removed the pump handle, only to find afterward that another opening had been cut in the boards and a new pump provided, with the inevitable result that there was more typhoid. Indeed, he stated that this persistent obstinacy and foolhardiness of the townspeople enabled him to provide for his growing family, since he cared for the sick as family physician in addition to giving advice to the healthy with respect to disease prevention. In 1887 the etiology of diphtheria was said to be sewage and water pollution. Dr. Vaughan boldly stated his conviction while attending the International Medical Conference that "diphtheria is not a filth disease but is induced by a specific poison." This statement was made before Klebs and Loeffler had announced their discovery of the causative organism.

We will pass at this time to 1898 and the onset of the Spanish-American War. It will be well here to tell of an interesting incident in connection with Dr. Vaughan's entrance into the fray. He writes:

"After the sinking of the Maine in the harbor at Havana, the proclamation of war against Spain and the call for volunteers, I was anxious to enlist; but, having a wife and five children dependent upon me, I could not conscientiously do so. There was quite an outbreak of enthusiasm for enlistment among the students of the University. President Angell was then in Constintinople as United States Ambassador to Turkey, and President Hutchins, who later became permanent president, was acting in that capacity. One day he came to me and said that the students were all astir about the war, wanted to hold a mass meeting with speeches, and might be stampeded into enlistment. He advised that the mass meeting be permitted, that representatives of the students be invited to talk, and that the older and wiser members of the faculty pour the oil of caution upon the troubled waters of youth. As Dean of the Medical School I was asked to attend the meeting and to do my part in allaying and cooling the enthusiasm and patriotism of the students. Reluctantly I consented to do my small share in this work. University Hall was crowded. I sat on the platform and listened to talk after talk by my older and wiser colleagues. One admonished the students that their first duty was to their parents, that they should not enlist without consulting them, and that they had parents distributed from the Atlantic to the Pacific. A second told the students that there were enough unemployed in this country to fill the quota called for by the President and advised waiting until the unemployed had enlisted, and if it appeared that the ranks were not filled by these, enlistment by the students might be considered. I had promised President Hutchins that I would be at least moderate in my speech, and I went to the meeting fully determined that I would comply with my promise. I have long known that in speaking I labor under a serious defect, but I had no realization until that night of the extent to which this defect dominates and determines my actions. Many a time I have gone before an audience intending by my words to palliate and to compromise, but after I begin to talk I have always been led by my convictions rather than by my intentions. At the mass meeting I was called upon to follow the colleague who had spoken of filling the ranks with the unemployed. This drove me into a mental frenzy, and standing before the audience, I said: 'God pity the country whose tramps must fight its battles; it is true that you are here to acquire an education with the purpose of fitting yourself for the work of life; but I would rather see these walls crumble into dust than to see you hesitate when your country calls. You have duties towards your parents, but your first duty is to serve your country.' Along this line I rushed on in a verbal flood until my time limit was reached. The next afternoon Governor Pingree, in his office at Lansing, called me by telephone, informed me that he had read my speech, had signed my commission, and that I would report for duty at Camp Alger, Virginia, without delay. Some enlist because they like the soldier's life, some for patriotic reasons, but I received my commission at the outbreak of the Spanish-American War because I talked too much."

Time forbids telling of the interesting experiences which Dr. Vaughan had during the war; suffice to say, the entire campaign was divided into two fronts, one against the Spanish Army, the other against the devastations of typhoid fever, malaria and yellow fever. During the first week of June, 1898, Dr. Vaughan became ill, and his vivid de-

scription of the onset of yellow fever is indeed enlightening:

"About four p. m. I began to feel a pain in the small of my back which rapidly grew more severe; in fact, I could hardly stand or walk, or at least in either of these positions I suffered rather severely. It required no diagnostic skill on my part to tell what was happening within my anatomy. I went to my tent, or at least to my field desk, and wrote to my wife telling her, I believe, the biggest falsehood I ever perpetrated upon her. I told her that I had been ordered into the interior of Cuba, that as near as I could calculate I would be gone two weeks, and that during that time she must not be anxious if she had no letter from me. I then went to the chief correspondent of the Associated Press, telling him that I was coming down with yellow fever, and asking that he say nothing about it in dispatches home. I had an orderly change the sheets on one of the cots in the hospital and there I dropped as soon as possible. With the first dawn Doctor Guiteras came, swinging his cane, making an effort to whistle a tune; he examined me most carefully, and said: 'Only a little malaria. You will be all right in a few days. Tomorrow I shall give you quinine. Don't you think that the air up at the yellow fever hospital on the mountain side is much better than it is down here on this low wet ground?' I expressed my agreement with him and my readiness to proceed to the yellow fever hospital and I made a movement to sit up on the cot. Gently, but firmly he held me down and then he explained: 'Your temperature is above 105 degrees; your pulse is below forty; a change in position, even the sudden lifting of an arm, might stop your heart. You will not move on any account. Men will come, lift your cot, place it on a flat car, and you will be carried to the yellow fever hospital. I shall go with you.' I was placed, as far as treatment was concerned, at first in the hands of a very able Cuban physician, Eccheverria. Pretty soon I was vomiting the characteristic black, almost tarry stuff, which gives this disease its Spanish name of 'el vomito negro.' My stomach would begin to contract its walls slowly, but most painfully. I could feel it constantly growing smaller and harder until it had apparently proximated the density and size of an ivory billiard ball, and then with a spring the walls would dilate, accompanied by a gush of black vomit. It seemed as though the blood in the capillaries of the stomach wall was being forced out under such pressure that even the red blood corpuscles were broken into the finest particles. Doctor Eccheverria's treatment, for which he had at that time a great reputation in Cuba, consisted essentially in the administration of a large dose of calomel, twenty or more grains, to be followed by the frequent drinking of a half pint or more of a saturated solution of Epsom salt, flavored with sliced limes or pressed lime juice. In addition to the large dose of calomel and the continuous administration of the lemonade, the doctor starved his patients. . . . As far as I can remember, my stomach became tranquil and free from pain in the early afternoon of the first day in the hospital. . . . On the tenth day after I had come down with yellow fever Captain Ireland came to my assistance and prepared me to leave for home on a transport. When I left the United States I weighed 200 pounds; when I returned, I weighed 150 pounds. . . . I may add that in 1924, twenty-six years after the battle of Santiago, I received a citation for 'gallantry on the field of battle.' Uncle Sam may be slow in conferring honors but he seldom wholly forgets."

On reaching New York in August, 1898, Dr. Vaughan found an order to report to the Surgeon General in Washington. Within a few days the Typhoid Commission had been appointed, instructed and set to work. This commission consisted of Major Walter Reed of the regular army, Major Edward Shakespeare, brigade surgeon, and Major Vaughan as division surgeon. The views held at that time as to the epidemiology of typhoid fever were as fellows: first, typhoid fever is a specific disease due to infection with the Eberth bacillus; second, it is disseminated by the contamination of drinking water, or, as was said, it is a water-borne disease; third, it is not known to be transmitted through other agencies, though flies have been suspected; fourth, it can be scientifically diagnosed by the agglutination test during life and by the pathological findings after death. Typhoid had appeared in every regiment during the 1898 campaign, more than 90 per cent of the volunteer regiments being invaded by this disease within eight weeks after assembly in camp.

The investigations of the commission brought to light many facts which were destined to affect favorably the health of the troops in future wars and materially assist in the gradual elimination of this disease from civil populations. Among the more important conclusions drawn from this study, which is probably the most complete epidemiologic study of typhoid fever ever made, are the following: first, typhoid fever is disseminated by the transference of excretions of an infected individual to the alimentary canal of another; second, the disease is more likely to become epidemic in camps than in civil life, because of the greater difficulty of disposing of the excretions from the human body; third, the water carriage system was recommended for permanent camps, and where impractical, all fecal material should be disinfected and then carted from the camp; fourth, infected water was not an important factor in the spread of typhoid; fifth, flies undoubtedly served as carriers of infection; sixth, men carried infected material in their clothes or on their persons and thus disseminated the disease; seventh, it is probable that the infection was transmitted to some extent through the air in the form of dust; eighth, the shortest period of incubation in the disease is probably something under eight days. The final re-

port prepared by Vaughan as sole survivor of the commission has paved the way for improvements in sanitation which have virtually eliminated typhoid as a serious disease in military life.

During the Civil War it was first realized that science could be of service in war as well as in peace and the National Academy of Sciences was chartered by Congress in 1863. This became a self perpetuating body, selecting its own membership, receiving no financial aid from the Government but yet ready at all times to be at the command of the President or Congress. As Dr. Vaughan has stated, the Academy was entrusted with the solution of problems ranging from "the preservation of paint on army knapsacks" to "the protection of iron vessels from rusting." During peace, committees have on request given advice on an equally wide range of subjects. At the annual meeting in 1916 the Academy tendered its service to President Wilson and this was immediately accepted. A committee of members of the Academy was appointed and christened the National Research Council, having authority to enlarge its membership from the scientists of the country. In very short order, the scientific forces of the country were mobilized and began to work in unison, not as preparation necessarily for the oncoming war but as preparation for any immediate emergency. As a member of the executive committee during 1916-17, Dr. Vaughan made frequent visits to Washington and New York, though the organization had as yet no official standing. It is true that the President had in 1916 appointed a council of National Defense, but at the time there was no connection. During this period many subjects were discussed with General Gorgas and his staff, largely pertaining to advancement of the care of soldiers in camp and at battle; likewise it was found that digitalis could be utilized from that growing wild in Oregon and Washington, and that satisfactory surgical needles could be made in this country. On February 28, 1917, the Council of National Defense invited the Research Council to coöperate with it in scientific matters.

Came the war—the National Research Council acted as the scientific component of the Council of National Defense. Dr. Vaughan entered the World War with the rank of Major and was assigned to duty with the medical division of the Research Council, where he continued his work as given above, and likewise served on the very important committee which scrutinized the qualifications of the numberless applicants for commissions in the Medical department. "In August, 1917, he was relieved from duty with the Defense Council and assigned as head of the Communicable Disease Section of the Division of Sanitation in the Surgeon General's office. In this position he had immediate supervision over the current reports of communicable diseases from all the camps and hospitals in the United States, compiling statistics, analyzing data and investigating methods of disease prevention." During 1918 he made many sanitary inspections of the various camps and rendered valuable service by his suggestions as to the prevention and treatment of the epidemics which were sweeping the camps. Doctor Vaughan was promoted to the grade of Lieutenant Colonel in February, 1918, and to the grade of Colonel in April, 1930. His worth to the country was recognized by the award of the Distinguished Service Medal, which was made with the following citation:

> "Colonel Victor C. Vaughan, United States Army. For exceptionally meritorious and conspicuous service. During his service in the office of the Surgeon General his contributions of advice and information have been of great value to the Army in connection with the control of communicable disease. During the recent epidemic of influenza, in particular, his work was of extreme value."

In appreciation of his services to the Allied Cause, the Republic of France honored him with the decoration of Chevalier of the Legion of Honor. It should be mentioned at this time that the five sons of Dr. and Mrs. Vaughan all enlisted and rendered valuable service. The eldest, Major V. C. Vaughan, Jr., lost his life shortly after the war was over while bathing in the river Cher.

In 1921, at the age of seventy, Dr. Vaughan resigned from all duties and functions at the University. In September of the same year he took up the duties of the chairmanship of the Medical Division of the National Research Council, which position he held one year. In 1922 Dr. Vaughan temporarily moved to Chicago, where he assisted in launching the journal *Hygeia*, which has been continued since under the auspices of the American Medical Associa-

tion. During this same year and the following were published the results of Dr. Vaughan's completed work in Epidemiology in the form of two tremendous volumes entitled "Epidemiology and Public Health." These volumes not only provided a compendium of knowledge with respect to disease prevention but contain many specific recomendations for improvements in Public Health Administration which will be attained only in years to come. In September, 1925, Dr. Vaughan again assumed the duties as chairman of the Medical Division of the National Research Council. In 1926, Dr. Vaughan in company with Mrs. Vaughan attended a Medical Congress in the Orient, visiting China, Japan and the Philippines. On his return in the Spring of 1927 he suffered a mild apoplectic seizure from which he fully recovered, but which terminated his active work. His death occurred at Richmond, Virginia, where he was suddenly stricken with a heart attack November 21, 1929.

HONORS AND PUBLICATIONS

It is impossible to enumerate in entirety the honors which were bestowed upon Dr. Vaughan. Most prominent are the following: In 1897 he was made an honorary Doctor of Science by the University of Western Pennsylvania. Four times he received the honor of the degree Doctor of Laws, the highest honor that can be conferred by an institution of higher learning. He received this degree from the University of Michigan in 1900, Central College in 1910, Jefferson Medical College in 1915 and from the University of Missouri in 1923. An unusual honor was the conferring on him of the honorary degree of Doctor of Medicine by the University of Illinois in 1894. For thirty-six years he was President of the Michigan State Board of Health, and for thirty years was Dean of the University of Michigan Medical School. Dr. Vaughan served as President of the American Medical Association in 1915-1916, and for many years remained a member of its council on Medical education. He was a member of the Association of American Physicians, being its president in 1908; he was likewise President of the American Tuberculosis Association in 1919. Dr. Vaughan was a member of the National Academy of Sciences, the French Society of Hygiene, the American Philosophical Society and several other learned societies. In 1928 he received the Kober medal of the Association of American Physicians for outstanding contributions to his profession. The military citations have already been mentioned. His contributions to medical literature are too numerous to mention, being represented by about two hundred fifty articles and seventeen books, some of which have gone through several editions.

For the past several minutes I have been attempting to present a picture of the contributions of a true scientist; it would be unjust should I fail to speak of Victor Vaughan as a man and the truly great personality which his was the fortune to be. By inquiring carefully we learn that his civilian life fairly sparkled with those attributes we call ideal; the name of Vaughan, like that of Angell, has perhaps become a synonym for beloved traits of character, in Ann Arbor. He could always take time out for communion with his friends; considerate and impartial he wisely gave of his counsel. At home the Vaughans were visited by the noted and the humble—their doors were open equally to both. His heart beat for the University and Ann Arbor, he had watched them both grow, was identified with that growth; he loved their pasts and was yet proud of the prospect of the future. Dr. Novy has said:

> "By his students he was loved and respected and to his colleagues who knew him best he was a man —honest, upright and sincere, whose every effort had as its objective the good of the University, which he loved as long as he lived."

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JUNE, 1932

"I hold every man a debtor to his profession, from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves, by way of amends, to be a help and ornament thereunto."

—Francis Bacon

EDITORIAL

POST-GRADUATE MEDICINE

The fourth annual practitioner's course in medicine and surgery and the surgical specialties under the auspices of the Department of Post-Graduate Medicine of the University of Michigan, will begin in Detroit June 6th and continue until June 18th. The different lectures, clinics and clinical demonstrations will be held at Harper, Grace, Henry Ford, Providence, Children's, Herman Kiefer and Receiving Hospitals. As stated in the prospectus, emphasis will be placed on the degenerative diseases, their contributing factors, early recognition and methods of control, particularly as related to general practice.

A perusal of the program informs one of a variety of subjects, including allergic and cardiac diseases, nephritis, diseases of the bile passages, diabetes and tuberculosis. Some phases of pediatrics are also included. The program also offers special courses in proctology and in gynecological pathology. Full information regarding these practitioner's courses may be obtained by writing the Department of Post-Graduate Medicine, University Hospital, Ann Arbor.

In the general news section of this number of the Journal is also announced a one-day clinic to be given by the Alumni Association of the Detroit College of Medicine and Surgery. Attendance at this clinic will well repay any whose time is not already preempted by registration and attendance on the two weeks' Post-Graduate Clinic.

We have stressed from time to time the importance of post-graduate studies. The annual practitioner's courses as offered this year afford an opportunity to acquire a knowledge of the latest developments in the various subjects treated. A movement has been inaugurated by some county societies, notably the Wayne County Medical Society, to extend the matter of physical examinations to include as many of the laity as care to avail themselves of the opportunity. No better preparation on the part of the profession for such an undertaking can be had than the annual two weeks' study. Come with notebook in hand and an inquiring as well as receptive mind and you will have the most profitable two weeks of the year.

COUNTY COMMITTEES ON MEDICAL ECONOMICS

The great economic changes we are now undergoing have caused most of us to realize that we have entered a new era. It is now incumbent upon us to adjust our manner of living to conditions as they now exist. We need a new measure of values; we must not lose our perspective; we offer a service that is absolutely necessary to the well being

of our fellow citizens. We believe that the laborer is worthy of his hire, but we have never denied this service to those who could ill afford to pay for it.

We are not trying at this critical time to shirk nor to evade our responsibilities, but this is a most opportune time for every County Society to name a committee on Medical Economics, to study their local problems, and to help solve those of the State and Nation, and I earnestly urge each and every one of our competent Societies to bring this matter up for discussion at their next meeting.

We have the educational background, the economic intelligence, and the sympathetic spirit of fairness so necessary in dealing with so vital an issue.

Never in the history of medicine has it been so essential that we have the whole-hearted coöperation of the entire profession.

The public looks to us for guidance in matters pertaining to health and health education and its many ramifications, and I am of the firm belief that great wood will come from an honest and sincere effort on your part to study these problems in a calm and dispassionate manner.

CARL F. MOLL,
President, Michigan State Medical Society.

THE SOCIAL TRAINING OF THE PHYSICIAN AND SURGEON

This is the title of an interesting paper by Dr. W. J. Mayo of Rochester, Minnesota, in a recent number of the Clinical Bulletin, the weekly publication of the Mayo Clinic. Dr. Mayo's long experience as a surgeon and his intelligent contact with a large number of human beings entitles him to a hearing on any subject. We are, however, interested in obtaining his ideas in regard to the social training of members of our profession. He begins by recalling that the emotions are the result of instinctive reactions concerned with food, sex and fear. In civilized communities the problems of food and sex are fairly well under control, but fear even in this day of well organized protection sometimes overcomes intelligence. Even well trained physicians at times show little regard for the emotional reaction of patients. Dr. Mayo goes on to express his belief that success in the practice of medicine depends to a large extent on the understanding of human emotions. The physician who is able to inspire his patients with confidence is often successful over him who is more scientifically trained. He even goes on to say that one of the years devoted to pre-medical work in college might be given over to social education to the advantage of the physician. A training which in the long run would be of greater service to him than schooling in some of the subjects that are comprised in the pre-medical curriculum.

The surgeon, says Dr. Mayo, should ever have in mind the desire of the patient to look well, hence we have an argument in favor of cosmetic results in plastic surgery of the face or in operations of the thyroid gland. Dr. Mayo goes on to mention operations in which the result from the esthetic viewpoint should also receive consideration. In operations on the large intestine, a permanent colonic stoma should not be undertaken without weighing carefully the chances of cure by some method that will permit the normal control of the bowels. "Why perform colostomy in a case of hopeless carcinoma," says he, "unless obstruction or relief of pain makes it necessary?" And he continues, "prolongation of life must come first and comfort and intestinal stability second, but all surgical procedures should be carried out as far as possible with deference to the emotions of the patient, which so frequently are concerned with social conditions and environment. Every person has a right to feel normal as well as look normal."

Dr. Mayo has been observant in regard to the factors in the success of members of the medical profession and concludes "that success depends more upon imponderables than on those things which can be weighed and measured."

THE EIGHTEENTH AMENDMENT

The Literary Digest has completed a second vote on the prohibition amendment to the Constitution within the past two years. The number of April 23 contained a summary of the vote particularly as the result of the poll among bankers and professional men of the United States. The clergy are first in their support of the eighteenth amendment but show a decline in their support contrasted with the poll made in 1930, a difference of 2,939 in favor of repeal in the vote within two years. The bankers are

next to the clergymen in support of prohibition, but in their case, too, there is a difference in favor of repeal contrasted with the 1930 vote of 9,102. In the year 1930, 19,956 physicians voted for enforcement and 32,235 voted for repeal. In the year 1932, 14,770 voted for a continuance of the prohibition law, while 60,229 voted against it. In regard to the legal profession the statistics are as follows: in the year 1930 the vote favorable to the amendment was 18,101, for repeal 34,886. Compared with this the vote in 1932 stood 12,736 for continuance and 52,561 for repeal.

This poll may be taken as a fair cross section of professional opinion in the United States and if we are to judge therefrom there is no question but that sentiment in favor of the eighteenth amendment is slowly but surely losing ground.

Coming to our own state, a total vote of 166,217 is recorded, of which number 130,288 ballots favor repeal of the eighteenth amendment. Of professional men in Michigan the straw vote is as follows: bankers for repeal 1,667, for continuance 633; clergymen for repeal of the eighteenth amendment 1,173, against repeal 270; of physicians 1,533 votes are recorded in favor of repeal; for continuance of the amendment 388. There is no question as to the change of opinion against prohibition as it has been carried on during the past decade. No doubt its failure to meet the expectations of thousands of its advocates has been due to insufficient public sentiment behind the enforcement of the law. We are not getting the thing many of us voted for twelve years ago, though the price of enforcement has in dollars and in loss of revenue from license been enormous.

Whatever method may be suggested for producing sobriety, temperance training has its claims. In the struggle for existence demanded today a clear head is necessary. Probably, however, the most effective method of curtailing the liquor traffic is to tax it. *The power to tax is the power to destroy.* During two visits to tax-ridden western Europe within the past six years the writer recalls seeing only one inebriate person. It is high time that an attempt were made to come to some decision in the light of changing public sentiment and a decade of experience, and the sooner the old and true, slow but sure, methods of temperance reform are resumed the better.

COMMERCIAL X-RAY LABORATORIES

It would seem scarcely necessary to warn members of the medical profession concerning the patronizing of X-ray laboratories operated solely by laymen. We know of no member of the medical profession who does so. However, it is a frequent thing for patients to consult commercial laboratories independently, have radiographs made and take the radiographs for which they have paid the operator, to a physician to show him what is the matter with them. To the average layman a radiograph is simply a picture.

"There is my chest or my stomach," or whatever the anatomical part may be.

"Now doctor what is the matter with it?"

Of course it goes without saying that an X-ray film of a chest or any other part of the human anatomy, in the majority of instances, means practically nothing unless accompanied by interpretation by an experienced roentgenologist. The commercial X-ray laboratory is as much out of place in modern medicine as any other medical specialty carried on by untrained laymen. The work of the commercialized X-ray laboratory consists in the making and selling of films to its patrons. No fluoroscopic observation is made and no written report as a rule is given out, which further points to the deficiency of the practice.

It is in the interests of not only medicine as it should be practised, but of the laity also, that the prostitution of any diagnostic method to commercialism should be severely frowned upon. The commercial laboratory is beyond the control of organized medicine, therefore organized medicine would do well not to recognize the work of free-lance technicians, but should insist that X-ray examinations be made entirely under competent medical supervision accompanied by definite written reports of the conditions found.

VITAMIN C ISOLATED

Dr. C. G. King of the University of Pittsburgh announced at the annual meeting of the American Biochemical Society at Philadelphia that he had isolated the antiscorbutic Vitamin C. Vitamin C is present in the juice of the orange and lemon as well as in cabbage. Dr. King was able to crystallize out the vitamin and test the results by ex-

perimenting on guinea pigs. The significance of the isolation of the vitamin is not important so far as human beings are concerned, since the fact of its presence in orange and lemon juices has been long well known. The value of the research according to the scientist lies in the fact that Vitamin C may be chemically analyzed and synthesized in the laboratory and produced commercially.

Just imagine, the housewife may now go to the grocer (we presume that brand of merchant will handle the product) and purchase an ounce or a pound of Vitamin C (depending upon the cost of production or isolation) and said merchant will have something tangible to sell rather than a fruit that is presumed to be rich in the hitherto illusive food principle. And vision the dapper grocer's clerk on the billboard advertisements on one side of the counter displaying the shining crystals of Vitamin C to a bride who is on her first housekeeping foraging expedition.

FIFTY YEARS SINCE DARWIN'S DEATH

It is half a century since Charles Darwin, the great naturalist, died. Darwin was educated to be a physician, but on account of ill health early in life did not practice his profession. It is said of him that during the last forty years of his life he was unable to undertake work that required any sustained effort of more than two hours a day, yet what he accomplished was simply enormous. A basis for his studies was his cruise on the Beagle (graphically told in his Voyage of the Beagle) which lasted for five years and supplied him with botanical and other data sufficient for many years of study. In 1859 appeared "The Origin of the Species," which, it is almost trite to say, is one of the outstanding works of all time on a biological subject. Darwin's work from the first has been of interest to the medical profession, and it is a significant fact that his old home at Down, Kent County, England, has been secured as a Darwinian museum through the munificence of a prominent British physician. Commenting on the fiftieth anniversary of Darwin's death the *New York Times* published the following editorial.

"Charles Darwin died fifty years ago. He had the distinction of having stirred the soul of man so profoundly that the whole trend of thought was changed. With the publication of "The Origin of Species" religion was confronted with a theory of life and man's place in the universe that could not be ignored; art turned from romanticism to realism, with such loose thinkers as Zola interpreting human relations as manifestation of the struggle for existence;. Buckle and Taine wrote history around the Darwinian principle; democracy found evolution confirming its own belief in the individual's right to assert himself; Nietzche's Superman transmuted the ruthlessness of nature into a creed. "Evolution," Spencer's variation of Darwin's "descent with modification," has become an overworked catchword. Society evolves. So do poets and statesmen, eggs and buds, nebulæ and stars, and so does the universe as a whole in these Einsteinian days.

"Where does Darwin now stand in biology? Reputations have been made by correcting his supposed mistakes. After deVries had proved that new species may arise suddenly by mutation and Mendel's laws of heredity were rediscovered in 1900 it seemed as if Darwin were superseded. But on further investigation it appeared that the large, sudden mutations or jumps by which new species are sometimes created are special cases of which nature disapproves. Research conducted within the last decade has shown that almost imperceptible mutations are the ones that count in evolution, and that by selection their direction and preservation are determined. So we come back to Darwin's own Darwinism. Lastly there is the evidence of fossils. When Darwin wrote "The Origin of Species" not a single complete evolutionary series was known. Now we have not only the classic example of the horse, but long lines of elephants, snails, titanotheres, to mention but a few. Natural selection still decides what shall live and what shall die. Geneticists have modified it, but it remains the only rational theory that accounts for the origin, distribution and relationship of living organisms—a magnificent generalization which may be compared in its sweep with the Newtonian conception of gravitation and which remains the towering contribution of the last century to science."

LOGIC

The following extract is from a new book entitled The United States in World Affairs by Walter Lippman and William O. Scroggs. It is here printed with permission of the publishers, Harper and Bros., New York. The extract is not medical in a technical sense but we would like to meet the doctor who either from economic necessity or choice is not interested in the subject with which it deals. We have here presented eleven *logical* deductions that must follow an economical and social condition characterized by lowered prices, paralysis of trade and production, with consequent unemployment.

Broadly speaking, it may be said that when there is a fall in prices, a recession in trade, a decline in production, and the subsequent unemployment and reduction of incomes,

(1) The revenue from all kinds of taxation is cut down.

(2) The contractual obligation of the state, in

the form of debt charges, remains stationary in terms of money, but, owing to a fallen price level, actually increases in terms of purchasing power.

(3) Another large part of the state's expenditure, such as money devoted to pensions, military and civilian salaries, and various grants for social services, can be reduced only at great sacrifice or at great political risk.

(4) Unemployment and distress create demands for emergency expenditures. (The dole.)

(5) Thus declining revenues, stationary obligations, and increasing demands continue to produce budgetary deficits.

(6) These deficits must be made good either by (a) increased taxation, or by (b) decreased expenditures, or by (c) borrowing, or by some combination of the three methods.

(7) A failure to meet the deficits by one or all of these methods must produce a withdrawal of gold from the central banking system, and, when this is exhausted, a default on contractual obligations, and a devaluation of the national currency.

(8) A devaluation of the national currency is tantamount to a reduction of the value of all fixed incomes and a partial repudiation of all public and private debts that are payable in terms of the national currency.

(9) The spectacle of a serious deficit which is not being covered by taxation or economy must shake the credit of any country without superabundant supplies of liquid capital. The threat of default or devaluation causes a flight from the currency by domestic and foreign investors seeking a safer currency in which to preserve their capital.

(10) A panic of this sort, involving, as it does, the withdrawal of gold and a consequent restriction of credit, aggravates still further the domestic economic crisis by curtailing imports, increasing the cost of financing business, diminishing profits, reducing production, enlarging the army of the unemployed, increasing the cost of relieving them, and reducing the yield of taxes.

(11) At this stage the domestic situation becomes inevitably a matter of international concern. For in such a breakdown of its economy a nation can no longer assure the fulfillment of its international obligations. The unsettling of all existing relationships between prices, costs of production, incomes, and debts, unsettles the existing adjustments among sections of a country and among the different economic classes of its inhabitants.

PERIODIC HEALTH EXAMINATION

Within the past decade many of our cities have undertaken special services which the economic conditions prevailing up to the autumn of 1929 seemed to warrant. In Detroit itself, it is said that approximately one hundred activities were undertaken which did not exist prior to 1916. All this required financing. With the depleted condition of the city treasury of the present time many useful services will have to be sacrificed. Many examples might be given. One of the most important that cannot be sacrificed without grave detriment to the municipality consists of health service rendered in the past. The public health committee of the Wayne County Medical Society has never been more active than at present. It is doing everything in its power to restore to the rank and file of the profession some of the services which at one time were performed with greater or less efficiency by the individual doctor. The school health inspection service will be taken over and carried on by the medical profession as a means of safeguarding the health of the younger members of the community. There is also being launched a concerted movement to emphasize the matter of periodical health examinations for adults. It behooves every member of the profession, and particularly each person in general practice, to equip himself for this work. The details of the movement we hope to publish in the next number of this Journal.

Through the leadership of the Public Health Committee of the Society the profession have taken a leading part in the antituberculosis campaign and diphtheria immunization. The committee has coöperated with the Detroit Dermatological Society and the Detroit department of health in the matter of referring patients with venereal disease for care to the members of the Society. It has also arranged for a representation of the Society on district relief committees. In the matter of making periodic health examinations the committee has the coöperation of the Detroit Board of Commerce.

A BIT OF MEDICAL HISTORY

CLAUDIUS GALEN

We have mentioned the post-Hippocratic sects or cults which consisted for the most part of an exaggeration in different directions of individual medical ideas. There was advancement of medical knowledge since the time of Hippocrates, but there was no integrating bond, no synthesis, which could select the true from the false. The need was for "a man strong in action, clear of thought, a scholar to know, a critic to judge the whole range of science and art."* It was not, however, until the second century of the Christian era that such a man appeared in the person of Galen. "In him Greek medicine attained not only its second climax but its final conclusion in theory and knowledge." And to put it tersely, "The healing *art* of Hippocrates was transmitted and transformed into the healing *science* of Galen."

*History of Medicine, Vol. I, Max Neuburger.

The known facts of Galen's life are few, but this is also true of numerous other personages who have influenced thought and action. Galen was born at Pergamos in Asia Minor in 130 A. D.† He received his early training from his father, Nikon, who was an architect, well educated in mathematics as well as in mental and natural philosophy. Galen was early impressed by his father's wisdom but appears to have reacted differently towards his mother. "I was blest," said he, "with a calm, just, gallant and sympathetic father, whereas my mother was of so irritable a temper that she would at times bite her maids, and was forever screaming, and quarrelling with my father, worse than Xantippe with Socrates." The father evidently did not believe that a rose by any other name would smell as sweet, for he chose a name for his son which signified the characteristics he most desired in his offspring, Γαληνος, which meant calm, peaceable. However, as much as he admired his father, he inherited the choleric temperament of his mother.

At the age of fourteen Galen began the study of philosophy, which he found of great interest, and at this early age he resolved to devote his life to philosophical studies. Influenced by a dream of his father's, supposed to have been inspired by Æsculapius, the son at the age of seventeen decided that henceforth medicine would be his major interest. It is of interest here to recall the remark of Sir Thomas Browne of "Religio Medici" fame: "We owe unto dreams that Galen was a physician, Dion an historian, and that the world hath seen some notable pieces of Cardan." He began to observe interesting cases of disease, even asserting his independent judgment in opposition to authority and entered upon the study of medicine in earnest in 147. Galen was given much to travel in the pursuit of knowledge. He visited Greece, Phoenicia, Palestine, Crete and finally the famous school of Alexandria, and eventually located in Rome in 164, where he soon became acquainted with many of the chief officials of the state, some of whom attended his lectures and demonstrations. He opposed bitterly the numerous healing cults that had sprung up since the time of Hippocrates. He was the prototype of the modern regular physician.

* * *

After nine years of wandering, during which time he appeared to have derived most from his sojourn at the Alexandrian School, together with his own independent observations, Galen returned to Pergamos, but did not long remain there. He left his native city and went to Rome to seek his fortune. His precocity is manifest in the fact that at the age of twenty-one he had written an anatomy of the uterus for midwives, a work on the diseases of the eyes and a treatise on respiration. His health was at times much below normal. He suffered from fevers, a condition which compelled him to adopt a rational mode of living, particularly in the matter of diet.

In spite of his personal popularity at Rome, for, as we have seen, he was sought after by the leading citizens as well as the rulers, he labored assiduously in the cause of science, and here during his busy career several of his greatest works on anatomy and physiology appeared. Roman medicine up to and during the second century A. D. was of a very low standard. It was sectarian in the extreme, and the various cults vied with one another for popularity by slandering the others. Such were the conditions with which Galen found himself surrounded. Naturally the numerous medical cults turned against him as he was accorded the favors of the great. The choleric inheritance from his mother stood him in good stead. He showed up the weakness of his antagonists and ridiculed the principal schools of his time. Fearing assassination, Galen left Rome as a fugitive after four years. His departure was coincident with the great plague that visited Rome in 166 A. D. The fact that he left the city at such a time brought down upon him the reproach of cowardice.* This plague, however, did not exhaust itself until fifteen years had passed. His journey to his old home was slow, during which time he visited various places, gaining information regarding medicine plants and minerals. After a brief so-

†The date of his birth has also been given as 129 A. D. (Sir Clifford Allbutt) and 131 A. D. by others.

Note: Associated with the Galenic period we have Rufus of Ephesus, about whom little is known. He studied at the Alexandrian School and is accredited with the first work on anatomical nomenclature. He is said to have been a physician of the Hippocratic type, a man of large experience, and exactness of method. Four works survive, on Diseases of the Bladder and Kidneys; Names of Various Parts of the Body; on the Gout, and on Purgative Remedies.

*Dr. Joseph Walsh (Annals of Medical History, March, 1931, Vol. 3, No. 2) has written a lengthy paper refuting the charges of cowardice made against Galen. This paper, which is well documented, is a convincing acquittal.

journ at Pergamos he was requested by the Emperor Lucius Verus and Marcus Aurelius to return to Rome to serve as military physician. Verus had in the meantime become a victim of the plague. Galen managed to persuade Marcus Aurelius that he had been told by Æsculapius in a dream that the Emperor should excuse him; as a result a compromise was effected whereby he remained in Rome entrusted with the medical care of the Emperor's son Commodus.

* * *

Galen accepted the teaching of none of the schools of his day, but looked upon himself as a true follower of Hippocrates. In anatomy he was a disciple of the Alexandrian school, but he was denied the opportunity of dissecting the human body as the Alexandrians had done before him. He lived in an age of prejudice against what was looked upon as desecration of the human body. His dissections were made on the carcasses of apes and pigs. He wrote a valuable book on osteology, "De Ossibus," which Osler declared "could, with very few changes, be used today by a hygienic class as a manual." Corner* says that among the works of Galen which have survived the centuries there is enough anatomy to make a volume about half as large as Gray's "Anatomy." "A pupil," continues this writer, "who read these books in the order recommended by their author would take a graded course in anatomy and physiology; first the bones for beginners, then the manual of dissection, then on the natural faculties, and finally "The Action of Muscles." He was not only a skilful anatomist but also a surgeon, since at the age of twenty-nine he was appointed surgeon to the gladiators of his native Pergamos. Galen, according to Corner, was not very systematic; he was repetitious, inconsistent and at the same time very positive in matters of opinion. Sir Clifford Allbutt's estimate was to the effect that he was a man of enormous industry, great sagacity and unbounded fluency.

* * *

The physiological research of Galen was even more important than his anatomical studies. He has been referred to as the earliest to employ the deductive method and the first to perform experiments on an extensive scale. He was the founder of experimental physiology. Galen showed that the arteries contained blood and not air, as his forerunners and contemporaries had assumed. He studied the movements of the heart and its valvular action, and almost lit upon the discovery of the circulation of the blood. He also experimented upon nerve roots and segments of the spinal column and the visceral sympathetic, ascertaining by section the effects upon costal and diaphragmatic respiration, control of bladder and rectum and cutaneous sensation. Galen was the first to make a distinction between motor and sensory nerves. The motor nerves controlled the muscles as "Chariot horses are managed by reins." He also described seven pairs of the cranial nerves, and demonstrated the contractibility of muscle.

Apart from his studies in anatomy and physiology his views on what may be designated Greek medicine were those of Hippocrates, with refinements. He had great faith in drugs and studied while on his extensive travels about the Mediterranean countries those plants and minerals which might form the basis of drugs. Galen differed from his great prototype in the fact that he was "heavily pharmaceutical." He was constantly on the lookout for specifics. He was *heteropathic* rather than homeopathic. His principle was cure by contraries and his drugs were classified by four qualities—hot, cold, moist and dry. He accepted the four elements and the four humors and constructed an elaborate system of crases and dyscrases, concoctions, complexions and temperaments by his various combinations of elements and humors. With Galen's theory of temperaments and Hippocrates' doctrine of humors, health depended upon the eucrasia; disease upon a faulty crasis or distemper. The words, "choleric," "sanguine," "melancholic" and "phlegmatic" were not introduced, however, until the ninth century and then by the Arab school. Galen stressed the importance of treating the individual rather than confining the attention too closely to the lesion or disease, an attitude that is very modern.

* * *

Unfortunately he lived at a time when his logical system failed to stimulate thought in others, but gave rise to futile bickerings and discussions by his successors. He became an authority or a substitute for thinking. The price we pay for our great men,

*Anatomy, Clio Medica, Corner.

says Allbutt, is that later generations make tyrants of them. The heresy of one age becomes the orthodoxy of the next and in the absence of new heresies mankind suffers.

Greenhill has divided Galen's works into seven classes, as follows: (1) Anatomy and Physiology; (2) Dietetics and Hygiene; (3) Pathology; (4) Diagnosis; (5) Works on Pharmacy and Materia Medica; (6) Therapeutics, Including Surgery; and (7) Commentaries on Hippocrates.

According to Meyer, Galen was for Rome an episode; for the middle ages an epoch. In addition to the permutations of elements and humors, he taught the strictum and laxum of the Methodists, whom he despised. Yet after all, declares Allbutt, he was the greatest master of the scientific method from the second century to Roger Bacon (1214-1292).

In comparing Hippocrates and Galen I offer the following paragraph from Cumiston.*

"Hippocrates possessed to the highest degree the genius of patient observation, methodical reasoning and prudent generalization. He first observed, afterwards reasoned and wisely generalized. Galen, on the contrary, with his brilliant audacious mind, impatient and quick, generalized without waiting to observe, and built castles in the air. His theories and systems, based on few or even incompletely observed facts, lacked a solid foundation. Attentive and judicious, Hippocrates followed step by step the processes of nature, verifying them by observation. Galen proceeded more boldly; impatient of restraint, he could not bear opposition. . . . Centuries have respected the doctrine of Hippocrates, but have completely destroyed Galen's system of medicine."

There is consistency in the apparent inconsistencies of the various evaluations of the man and his work. Though separated by about six centuries, Hippocrates may be regarded as the "Darwin," and Galen the "Huxley" of Greek medicine. One was the calm student, the other the polemic defender of the faith. Had Galen appeared in a different age—an age of intellectual virility—his work might have been short-lived. He was born, however, at a time when men looked for a guiding hand rather than an opportunity to display initiative.

Galen was such a prolific writer that it is estimated he left over five hundred treatises, many of which have been lost. According to Choulant there were 181 titles, of which 98 are presumed to be genuine, 19 fragmentary, 45 spurious, and 19 doubtful. Credit of preserving and transmitting a large portion of Galen's work must go to the Arabs. Galen was succeeded by Greek physicians of the Byzantine school, who simply copied and commented upon his work. The first Greek edition appeared in the year 1525. There is an English translation of Galen's book on The Natural Faculties in the Loeb Classified Library in which a page of Greek is faced by a page of translation in English, which gives one a good idea of Galen's style and thought.

* * *

Besides Hippocrates, who perhaps exerted the greatest influence on him, Galen studied and was greatly influenced by the writings of Aristotle. These were his two great masters, who in reality supplemented each other. Aristotle satisfied his longing for ascertaining the reason of things. Aristotle held a belief in a God by whom the universe was designed. Doubtless the influence of Aristotle, whose philosophy was adopted by the church through the middle ages, aided in prolonging the influence of Galen well into the seventeenth century.

Galen was a monotheist in religion, though not a member of the Christian Church at Pergamos. Dante accords him a place in the Inferno in the first circle among those who lived without either baptism or Christianity. He seems, however, to have been in very good company, for with him Dante places Socrates, Plato, Euclid, Ptolemy, Aristotle, Hippocrates and the Arabian physicians Avicenna and Averrhoes. Regarding his own works Galen wrote:

"In writing these books I compose a true and real hymn to that awful Being who made us all; and, in my opinion, true religion consists not so much in costly sacrifices and fragrant perfumes offered upon His altars, as in a thorough conviction impressed upon our minds, and an endeavour to produce similar impression upon the mind of others, of His unerring wisdom, His resistless power and His all diffusing goodness."

Galen died in 201 A. D. His work survived him until the sixteenth century, when it became obsolete in the discoveries of Vesalius and Harvey. His contribution of the experimental method still lives.

*An Introduction to the History of Medicine by C. G. Cumiston.

THE TOTING O' HIS TRAY

Dae ye min' me tellin' something o' th' funny things
ah see
'boot th' people wha are gaitherin' where ah happen
for tae be,
It may be th' mornin' aifter, or th' feedin' time o'
day,
But it's fun tae see th' fat man a totin' o' his tray.

He sits him doon in comfort, wherever he may
squeeze,
But he loses his composure if at a' he has tae
sneeze,
An' its rough an' tumble tackle tae save his facial
map,
When his soup gaes tumblin' doonward tae th' mid-
dle o' his lap.

They're maistly verra snappy in th' feedin' o' their
face,
An' its nae sae verra aften that they say a word o'
grace,
But when a lump o' butter spreads itsel aroon' his
wais',
Th' words he utters tae himsel are heard about th'
place.

Ah weel, Guid Nicht.

WEELUM.

INCREASING MOTOR FATALITIES

(New England Medical Journal)

Drivers and pedestrians alike, according to the *New York Times,* would be more circumspect if they read the text and diagrams of the Travelers Insurance Company's report of motor vehicle accidents in 1931. This report emphasizes the tremendous importance of the minor decision which both driver and pedestrian are so frequently called upon to make. Our inefficiency as motor-car drivers, according to George R. Wellington, Rhode Island Commissioner, is responsible for our serious accident problem, and Commissioner Eynon of Pennsylvania gives as his opinion that traffic safety is ninety-five per cent education and five per cent enforcement.

Our motor vehicle casualties are compared impressively with the casualties of the World War, in eighteen months of which 50,510 members of the American Expeditionary Force were killed in action or died of wounds, and 182,674 were wounded. In the eighteen months ended December 31, 1931, 53,650 Americans were killed in motor vehicle accidents and 1,576,840 were injured. Worse still, the fatalities of 1931 showed a 3.3 per cent increase over 1930, with a two per cent decline in registration of cars. This rise is considered to be due to increased speed. Pedestrian fatalities dropped more than three per cent, but deaths from collisions increased twenty-four per cent.

Further figures are brought out, such as the fact that more than twenty per cent of pedestrians killed were under the age of fifteen and that the annual economic loss is estimated at $2,500,000,000 as compared to $2,200,000,000 spent on public school education. Sunday, obviously, is the day of greatest casualties and the peak hour is from 6 to 7 p. m.

MEDICAL ECONOMICS

CAN WE AFFORD STATE MEDICINE?

J. G. R. MANWARING, M.D.
FLINT, MICHIGAN

PART IV

WOULD A GOVERNMENT MEDICAL SERVICE BE THE BEST SERVICE?

"Ah, yes," Mr. Chesterton commented as he lighted a fresh cigar, "you were speaking of the panel system and state medicine?"

"The panel system is fatal. It is a fatal system. By it the country is divided into classes of masters and slaves. It is further a direct attack against the liberty of the poor, and though it is an attack in a conservative garb, it is none the less a menace.

"The panel system of medical practice or its allied systems is merely the delegation of the practice of medicine to a group of people in buttons.

"I am against people in buttons interfering with the rights of any man. The theory of the rational modern state is against bureaucracy. The dole is a tragic thing.

"So is any measure that metes out a perpetual interference with individual rights, and the free contacts of a citizenry. Which is exactly what the panel system of medicine does. It removes from a class of people the right to make free contacts for individual necessities.

"It is an evil thing when you classify and codify and put into a system of law a recognition of employers and employees as variant classes to be shown under any constitution. It is an evil thing to deprive the poor of the privilege of choice and to make of the people a sort of serfdom!" Gilbert A. Chesterton, an interview, December, 1930.[1]

In addition to the extravagance and necessarily tremendous cost of such a service it would, like most services of the kind, be standardized, institutionalized and carry with it all the discomforture of red-tape.

It leads to malingering on a grand scale which the doctor must "aid and abet" for his own protection.

The physician is made a minor cog in a machine run by political appointees with all that goes with such a position.

There is a fundamental rule in business relations which always holds true, *i.e.,* the best service is rendered to the one who employs you. It would seem that nothing yet proposed can take the place of the relationship of the physician and patient as we now have it. There is no service so satisfactory nor more appreciated by a patient than that for which he pays directly. Nothing fixes the responsibility of a physician to his patient so much as the knowledge that to this patient he must look for his pay. This relationship makes for courtesy, attentiveness, consideration and kindness in the care of the sick. To the patient these services are more apparent than special skill and are the things by which he judges. While to him they are inestimable he knows he can buy them with direct money payments.

In state medicine the finer relationships are not cultivated and are apt to be lost in large part though there are unusual men who always will establish them. Every physician who was in army service or

who has served in city clinics, dispensaries, et cetera, knows this to be so. Whether in industry, politics, or profession your primary responsibility is to the one who gives you your job. It will make a lot of difference to the patient whether he hires his own doctor or he accepts a political appointee.

How about the services themselves in a system of state medicine?

There will be two kinds of practice as now, office practice and institutional, or group practice.

Office practice of the contract type increases the tendency to superficial examination and consideration, invites an inordinate seeking of medical care and a corresponding pacifying distribution of unneeded medicines. With no keen personal interest in the patient, explanations and efforts at education will be lessened. Again, malingering will be highly developed and the physician will have to close his eyes to it so that he does not lose his following.

These are not imaginary but are developments in England as shown in numerous reports.

The physicians of the less ambitious type under such a system get a living and are satisfied. It is the patient who loses.

The other type of practice will be of the group kind. Group practice as we now have it has some curious developments. Private groups have the incentive that success depends on satisfaction given to its clientele.

But the division of responsibility, anywhere and always, lessens alertness.

"The idea that a staff of diagnosticians can make an examination of a patient, each in his own field and then somebody who has not up to then seen the patient can summarize the whole set of reports and make a diagnosis, is not only the most unscientific conception imaginable, but also one of the most dangerous. A diagnosis is a personal thing—an art as much as a treatment is. And diagnosis and treatment are continuous. One leads to the other."[2]

In many of our best hospitals a certain routine is followed. The prospective patient sees a clerk, is given an identification card, assigned to a department, is visited by an interne, and the interne takes a complete history, makes a physical examination and asks for a series of laboratory examinations. All this data is assembled, the interne indicates what his diagnosis is and then at last an appointment is made to see the chief or an assistant who is an expert. The patient is ushered into the august presence and is greeted breezily, and, if formally introduced, is given a warm hand shake. Then the chief turns his back on the patient and goes over the record carefully. Finally he turns to the patient again and states his diagnosis and gives whatever advice he has to offer.

The most important part of the whole procedure is taking the history and making the physical examinations. These are arts needing not only knowledge but long experience to acquire. The standard of work is set by the interne who is there precisely because he isn't good enough to practice yet.

The experienced expert's contribution is a hand-shake. It is only when the patient is a "big-gun" or something unusual is suspected that this routine is humanized and specialized.

If private clinics get this way, one can well understand what the routine would become in government run clinics. The only contact with the expert, the hand-shake, would be the first to go.

Students will question the efficiency of any kind of business run by democratic governments.

They likewise can well suspect the quality of service rendered by bureaus in a popular government.

If state medicine comes the sick will lose!

REFERENCES

1. Illinois Medical Journal, Dec. 1930.
2. Clendening, Logan: Ill. Med. Jour., Dec. 1930.

608 1ST NAT. BANK BLDG.

GENERAL NEWS AND ANNOUNCEMENTS

Dr. Walter J. Cree of Detroit was recently appointed to the Medical Reserve Corps of the United States Public Health Service with the rank of surgeon.

The Genesee County Medical Society Bulletin has published a list of members who have been in practice a quarter of a century or more. They number fifty-two. Seven of this number have been in practice over forty years.

Dr. B. R. Corbus, Grand Rapids, Chairman of the Council of the Michigan State Medical Society, attended the annual meeting of the American Gastroenterological Society during the first week in May. The meeting was held at Atlantic City, New Jersey.

Dr. Gordon Richards of the University of Toronto addressed the Wayne County Medical Society on the subject "The Value of Roentgenology in the Diagnosis and Control of Treatment in Pulmonary Tuberculosis." This program was put on by the Detroit Roentgen Ray and Radium Society, May 3.

The election of officers for the year 1932-33 of the Northern Tri-State Medical Society at its 59th annual meeting at Toledo, resulted as follows: President, Edward B. Pedlow, M.D., Lima, Ohio; vice-president, G. O. Larson, M.D., LaPorte, Indiana; secretary, Edward P. Gillette, M.D., Toledo, Ohio; treasurer, H. F. Randall, M.D., Flint, Michigan; counsellors, Chas. Lukens, M.D., Toledo, Ohio; P. N. Sutherland, M.D., Angola, Indiana, and J. H. Andries, M.D., of Detroit, Michigan.

The Alumni Association of the Detroit College of Medicine and Surgery will hold a one day clinic on Wednesday, June 15. The Clinic will be conducted by the staff of the College. The forenoon will be spent as an operative clinic at the Receiving Hospital. In the afternoon at the College there will be a paper and a presentation on the subject of Electrocardiography by Dr. W. J. Wilson of Detroit. This feature will be followed by a lecture on Gross Pathology, together with an exhibition of specimens by Dr. James E. Davis, Pathologist of the College. A dinner will be held at the Book-Cadillac Hotel at 6:30 P. M. There will be a fee of $3.00, which will cover the annual dues to the Alumni Association, the attendance on the clinics as well as the cost of the dinner in the evening. There will be a speaker of prominence at the dinner. Alumni of the class of '32 and all preceding classes at intervals of five years will hold their annual reunions.

The Wayne County Medical Society annual elections, which were held May 17th, resulted as follows: President-elect, Dr. A. W. Blain; Secretary, Dr. E. C. Baumgarten. Trustees, five year term, Dr. H. W. Plaggemeyer; one year term, Dr. H. A. Luce. Dr. H. Wellington Yates will take office as President of the Wayne County Medical Society on July 1st.

OBITUARY

DR. R. B. CANFIELD

Dr. R. B. Canfield, Professor of Otolaryngology of the University of Michigan Medical School, was the victim of an automobile accident early on the morning of May 12. Dr. Canfield is said to have been in the act of passing another car or a motorbus when his machine ran off the pavement near Ann Arbor, striking a tree. Death was almost instantaneous. He was born at Lake Forest, Illinois, in July, 1874. Dr. Canfield was educated and was graduated B.A. at the University of Michigan in 1897. He received the degree of M.D. in 1899. Following this he studied at the University of Berlin, Germany. He was Assistant Surgeon to the Manhattan Eye, Ear, Nose and Throat Hospital in 1904, also attending laryngologist in the New York City Clinic for laryngological tuberculosis the same year. In 1904-05 he was appointed clinical professor of diseases of the ear, nose and throat of the medical school of the University of Michigan. Since 1905 he has occupied the position of Professor of Otolaryngology. During the war he was chief of the surgical service Base Hospital No. 76 A. E. F. Dr. Canfield was a Fellow of the American College of Surgeons, a member of the American Otolaryngological Society, a member of the Washtenaw County Medical Society, Michigan State Medical Society and American Medical Association. The accident which caused his death occurred while Mrs. Canfield was in New York City, having accompanied her daughter east preparatory to a trip to Europe. Miss Barbara Canfield was about two days from New York in company with Dr. and Mrs. Furstenberg, en route to Naples.

DR. J. T. CRAMER

Dr. Jacob T. Cramer died at his home in Muskegon on April 5, at the age of fifty years. He had been in ill health since 1924, when he was compelled to give up active practice. Dr. Cramer was born in Muskegon, where he attended the public schools, completing his education at the University of Michigan and at Rush Medical College. He was appointed city physician in 1911 and county physician in 1917, holding each position for two years. Dr. Cramer is survived by his widow Clara and one daughter, Katherine. He was a member of the Muskegon County and Michigan State Medical Societies.

DR. GODFREY F. HAMLIN

Dr. Godfrey F. Hamlin of Oakland County died at Harper Hospital, Detroit, on May 5th. He was born in Ontario, February 20, 1866. He was educated at the Goderich High School, later attending the Michigan College of Medicine and Surgery, Detroit, from which institution he received his medical degree in 1896. The same year he located at Commerce, Oakland County, where he practiced until 1902, when he removed to Farmington. In 1907 he moved to Rochester, where he had continued in practice until his last illness. He was one of the early members of the Oakland County Medical Society. He is survived by his widow, Mrs. Ann Hamlin.

DR. JAMES E. MEAD

Dr. James E. Mead died on April 17 from pneumonia. He was born in Boston in 1873. Dr. Mead received his education in the schools of Detroit and graduated from the Detroit College of Medicine in 1899. Following his graduation he served as an intern in Harper Hospital. He was a contract surgeon with the United States army in the Philippines in 1902, after which time he returned and began practice in Detroit. Dr. Mead's interests were chiefly along the line of industrial surgery. He was connected with the Ford Motor Company from 1910 to 1920, and was chief of the medical and sociological departments from 1920 to 1929. He is survived by his wife and one son.

DR. THOMAS A. BAIRD

Dr. Thomas A. Baird, one of the best known physicians of Bay City, died at Mercy Hospital, Bay City, on April 27, after several months' illness. He was sixty-nine years old. Dr. Baird was born at Chesterfield, Ontario, and received his early education in the schools of his native place. He later matriculated at the University of Toronto but graduated in medicine from the McGill University of Montreal in 1885. He located in Bay City the year following his graduation, having continued his practice until his last illness, which began in December, 1931. Dr. Baird is survived by his widow; one son, Dr. F. S. Baird of Bay City; two daughters, Mrs. Thomas of Birmingham, and Dorothy of Ann Arbor. He was a member of the Bay County Medical Society, the Michigan State Medical Society and American Medical Association.

MECHANISM OF EDEMA IN RELATION TO CLINICAL CLASSIFICATION OF BRIGHT'S DISEASE (NEPHRITIS)

Henry A. Christian, Boston, found edema a very useful basis of classification of Bright's Disease along with a time division into acute, subacute and chronic. Using these criteria he has formed a clinical classification that has been very helpful. Properly to apply edema as one of the criteria of classification of Bright's disease or nephritis necessitates a reasonable understanding of the pathologic physiology of edema, and although the mechanism of edema is very complex and as yet far from thoroughly understood, recent investigation carried on in many different laboratories has added much to the knowledge of it, so that one is in a position so to formulate this knowledge as to aid in an understanding of the several types of Bright's disease. It is obvious that edema or the appearance of abnormal amounts of fluid in tissues and body cavities does not arise always from the same cause or, so to speak, does not always have the same mechanism. This permits one to subdivide edema into seven clinical varieties: cardiac, hepatic, renal, nutritional, anemic, inflammatory and anaphylactic edema. Of these varieties of edema, cardiac and hepatic edema have a very similar mechanism; in the same way, renal, nutritional and anemic edemas are closely related, as are inflammatory and anaphylactic edemas. In the mechanism of these several varieties of edema there are concerned six significant factors: filtration pressure, osmotic pressure, permeability of vessel wall, salt content of the tissues, lymphatic drainage and nervous control. The exact part played by each factor is not fully understood as yet, and, when they act in various combinations, great complexity may enter into the process. However, a reasonable understanding of the mechanism of edema may be obtained by analysis of the action of some of these factors in a somewhat schematic way. This relatively simple clinical classification is a practical, easily applied and useful grouping of patients with Bright's disease. Almost every patient can be placed properly in the classification after relatively simple clinical study. Hence the author commends its use.—*Journal A. M. A.*

COMMUNICATIONS

ANONYMOUS

Adrian, Michigan, April 15, 1932.

Carl F. Moll, M.D.,
President Michigan State Medical Society,
Flint, Michigan.

My Dear Dr. Moll:

In these strenuous times wherein the medical profession is going through a period of great distress, I think the time is quite opportune that you, as president of the Society, should exercise your efforts in curtailing expenses, starting with the executive officers down through the minor expense lists of doctors detailed to appear before the different county societies.

We have, as you know, a secretary who has enjoyed a munificent salary for many years which salary may have been the means of lessening his overhead expenses as far as his private practice is concerned. I am not criticising the present incumbent and wish you to feel that this is purely impersonal. But drastic measures should be adopted to lessen the burden of the struggling members of our profession.

I am sending this anonymous for reasons obvious to yourself, but feel that you as executive head of the Society should bend every effort to pare the cost of administration to the bone.

You are at liberty, and I wish you would publish this in our State Journal.

Very respectfully yours,
A loyal member of the State Society.

The above letter would be uncalled for if the writer read the State Journal. In the February issue, on page 164, he will note that the Secretary's salary has been reduced from $6,500.00 to $4,000.00 per year, a cut of nearly 40 per cent. The Editor's salary from $3,500.00 to $2,500.00 and other substantial reductions were made throughout the budget. These economies helped make it possible to give a 25 per cent reduction in our annual dues.

If every member would carefully read the minutes of each Council meeting, and the minutes of the proceedings of the Executive Committee of the Council, as published in the Journal, they would have a much more comprehensive understanding of our problems and the sane and efficient manner in which they are met. It would give them a broader and more sympathetic viewpoint, with the efforts the Council are exerting on their behalf.

It has been said that leadership can hardly develop and be effective unless the rank and file are properly informed and they will only be informed when they seek information and expend some effort of their own to get it.

Your officers invite constructive criticism, but no criticism can be constructive unless all the facts are known and carefully weighed.

CARL F. MOLL, *President.*

SOCIETY ACTIVITY

A. M. A.—NEW ORLEANS

The 1932 session of the American Medical Association in New Orleans is now history. Our six Michigan delegates were in attendance. They will prepare a detailed report which will appear in the July issue. Dr. Dean Lewis of Baltimore was elected President-elect. Milwaukee was selected as the place for the 1933 session.

OUR ANNUAL MEETING

The profession of Kalamazoo is actively engaged in perfecting arrangements and details for our September, 1932, annual meeting. The Scientific Committee has about completed program features which will embrace a radical departure from former programs. Assurance is given that it will be the best program ever presented. Local arrangements are ideal. Note the details and features that will be announced in the August and September issues. The dates are September 13, 14, and 15.

SURVEY OF MEDICAL SERVICES AND HEALTH AGENCIES

In the May Journal the Committee outlined its objective and plan of study. *The success of this survey is dependent in great degree upon our members' coöperation.* Every member will receive a questionnaire. Fill this out promptly and *return without delay.* County officers will give material aid by responding to the request for county information. It is essential that every officer and member give prompt response.

The information gained from this survey will be of tremendous value in solving economic problems. Members' future interests are involved in the solution. The Committee begs for wholehearted, prompt response and aid.

KENT COUNTY'S SURVEY

Following an address on the "Social Trends of Medicine" delivered before a January meeting of the County Medical Society a committee on Public Relations was appointed. The committee was directed to make a local survey and bring in recom-

mendations. Intensive work was done and on April 19 the Committee presented the Society with a 48-page report of findings and recommendations.

This report has been appraised by the press and citizens as the most outstanding contribution to the advancement of the economic interests of the community. National commendation has been expressed. It is also stated that it is *the first concrete presentation of a plan* that promises to accomplish a solution of providing adequate medical care and hospital care for the indigent and reducing the cost of such care for persons in the lower earning brackets. The Committee presents a sound plan for community participation.

The report is an impressive one, imparting a wealth of facts and actual conditions. It is only possible to tabulate outstanding features. The plan will be outlined in the next issue of the Bulletin of the American Medical Association.

These are a few of the facts:

1. Average sickness per person is four days per year.
2. Average cost per citizen is $4.25.
3. Physicians' fees are less than 50 per cent of the cost of illness.
4. Average annual wage of 70,000 wage earners in Grand Rapids is $1,441.24.
5. There are 170 social investigators.
6. There is one physician for every 1,000 population.
7. The gross income of 140 doctors in 1929 was $1,109,000, giving an average gross per doctor of $8,276.12.
8. The net income of all Kent physicians was $6,007.35.
9. On March 1 the community owed the doctors in bills receivable $1,615,048.
10. The profession's annual contribution to the health welfare of the community is $792,220—an amount unequaled by the community taxes and charitable welfare contributions.
11. The public voluntary contributions for all health activities is $272,430.16. The community raises by taxes $154,094, giving a sum of $426,524.16, which represents what the community gives for indigent and community health care.
12. The average net income of 40 per cent of the doctors is $2,698. Net income of 71 per cent of the doctors is $4,260.

Many more pertinent local facts related to health departments, clinics, hospitals and welfare activities are imparted.

The report reveals outstanding conditions and then sets forth the community's responsibility in dealing with the problem. It is stressed that the burden is not the sole responsibility of the physicians or hospitals. It points out how the profession can no longer be expected to assume the whole burden and advances an equitable plan of solution.

The report was unanimously adopted by the society and the Committee directed to enlist community support in instituting the plan. It is now so engaged.

The following editorials in the local press express the public reception of the report:

LEADING THE WAY

Seldom, if ever, has a revolutionary program formulated by a small group of men been received with the enthusiasm and approbation which the Kent County Medical Society accorded the report and recommendations of its committee on public relations, which it unanimously approved Tuesday night.

Long applause followed the reading of the report. Questions were asked. Commendation was voiced by man after man. They recognized that which Grand Rapids as a whole will recognize—that Grand Rapids, led by these men, is a step—and a long step—in front of the rest of the nation in moving toward the first comprehensive, unified plan for community health.

Some of the things this committee recommended have been tried out on a small scale in a few communities, but never before in the history of American medicine has a medical society taken the lead in such a movement embodying all the reforms to which the Kent County Medical Society has pledged itself. This program will require the active study and coöperation of every civic body in Grand Rapids. It will take time; and the committee, after months of intensive work, has only started. But when it is under way Grand Rapids will have blazed the trail that certainly will be followed by all progressive communities.

To Dr. Ferris N. Smith, chairman of the committee, and his fellow workers, Drs. Harrison S. Collisi, Vernor M. Moore, Donald M. Morrill and Frederick C. Warnshuis, Grand Rapids owes a debt that can be paid only by giving them the full cooperation of every agency and individual in the city.

The report is highly illuminating. The action of the Kent County Medical Society is a great forward step and a real contribution to the easement of the public burden. All those groups and sectors and institutions which have to do with the public welfare should heed, should coöperate, should assist in making the plans applicable to their individual units and, in helping, to give to the public the benefits to be derived.—*Grand Rapids Herald.*

THE DOCTORS' PLAN

The Kent County Medical society has adopted and recommended an intelligent plan devoted to solving at one time the following Grand Rapids and Kent county problems:

1. The excessive cost of public medical care, mounting steadily during the depression.
2. The lack of proper centralized investigation of cases to determine family income or indigence, and the charge for services which a patient may fairly be expected to bear.
3. The consequent excessive demand upon physicians for free service and time, and the loss of income they should reasonably receive from many patients now turned over to them by public and private agencies.
4. The exorbitant cost and inefficiency of public health nursing in Grand Rapids, due to duplication of visits among the various agencies.
5. The lack of a zone hospital clinic and dispensary system, with rates fairly adjusted to ability or nonability to pay, a lack which results in discouraging inconvenience, needless expense, crowding of public offices and unfair standards of compensation.
6. The need of a rotating system fairly distributing free and part pay work among the doctors.
7. The failure to decide upon and adopt a "midrate" fee for inclusive hospital and physicians' services, adjusted to average ability and known in advance.
8. Lack of a system of self-support health insurance.

Ambitiously and after a most thorough survey the Medical Society's committee has attacked all these, and many minor problems simultaneously through its complete and highly constructive report.

Disorganization — or nonorganization — of these services has cost city, hospitals and physicians a vast and unnecessary amount of wasted time and money. Through the leverage of their right to refuse service the physicians in the Medical Society hold a whip hand which they have determined to use, not to the detriment but for the welfare of Grand Rapids.

Their plan undoubtedly should result in a fairer collection of fees and a reduced cost to themselves in terms of purely charitable service. It will bridge that needless gap between full pay and free care, collecting a small if fair sum from many who hitherto either paid nothing or, from pride and lack of funds, suffered illness without attention. It provides a means by which the self-respecting family of severely reduced income may purchase medical service within reason and need not seek public alms for it.

But the greatest service will be that of reorganizing and relocating service to all classes of public or part-pay patients, whose support depends upon donated or tax-supplied funds. If the doctors accomplished nothing else but the setting up of a competent central nursing bureau to eliminate duplication, that in itself would be a large achievement. And that is but one proposal of many, carefully worked out, which appear in their report and deserve sympathetic public and agency consideration.—*Grand Rapids Press.*

DEXTROCARDIA SECONDARY TO EVENTRATION OF DIAPHRAGM: REPORT OF AN ASYMPTOMATIC CASE

According to L. MINOR BLACKFORD and WILLIAM TELFORD BOOTH, Atlanta, Ga., congenital dextroposition of the normal heart without evidence of transposition of other viscera in most cases is probably secondary to eventration of the diaphragm. They report a case of this type in an athletic youth. The condition has been entirely asymptomatic up to the present, and the authors believe that the position of his heart will never cause the patient any trouble. It is possible, however, that subphrenic symptoms may develop or that an extraordinary increase in intra-abdominal pressure, brought on by trauma or tremendous exertion, may result in rupture of the weakened diaphragm.—*Journal A. M. A.*

MINUTES OF THE MEETING OF THE EXECUTIVE COMMITTEE OF THE COUNCIL

April 21, 1932

The April meeting of the Executive Committee of the Council was held in the Michigan Union, Ann Arbor, at 4:00 o'clock, April 21, 1932, with the following present: B. R. Corbus, Chairman, Henry Cook, J. D. Bruce, C. E. Boys, Geo. L. Le Fevre, Henry Carstens, C. F. Moll, President, F. C. Warnshuis, Secretary, and for a period of time, Dr. J. E. McIntyre.

1. The Secretary presented a communication from the Bruce Publishing Co., advising a further reduction in the price of printing the Journal, which was received and filed.

2. The Secretary presented a communication from the President of the Michigan League of Birth Control in which endorsement from the State Medical Society was requested. After discussion no action was taken, but the communication was referred to the Chairman of the Council.

3. Dr. Sinai gave a brief outline of the proposed plan of study that is being conducted by the special committee on Medical Service and Health Agencies in Michigan.

4. Upon motion of Bruce-Boys, the Secretary was directed to notify delinquent members that their Journal would be discontinued with the May issue unless their dues were paid or arrangements had been made for deferred payment.

5. Upon motion of Bruce-Le Fevre, an appropriation of $100.00 was made to the Public Relations Committee of Kent County for defraying the expense of certain investigations in that county.

6. Upon motion of Boys-Le Fevre, the Secretary was directed to provide badges for the Annual Meeting of the Ladies' Auxiliary.

7. Upon motion of Bruce-Le Fevre, an appropriation was made to help defray part of the expense of the tablet to be erected in the Hillsdale Hospital in memory and tribute to Dr. W. H. Sawyer. The State Society joining with the University in according this recognition of his services to the profession and to the university.

8. Several other features of organizational activity were informally discussed for the purpose of outlining future organizational activity.

The meeting adjourned at 7:15 p. m.

COUNTY SOCIETIES

HILLSDALE COUNTY

The Hillsdale County Medical Society convened at the Orange Lantern Tea Room, Hillsdale, on April 27, at 6:30 p. m. An excellent dinner was served, after which the society adjourned to the Mitchell Library for the regular quarterly meeting; the President, Dr. C. L. Hodge, in the chair. After the reading of the minutes the president introduced the speakers of the evening, Dr. H. W. Plaggemeyer and his associate, Dr. Carl G. Weltman, both of Detroit.

Dr. Plaggemeyer gave a most interesting and instructive address on "What the General Practitioner should know about the Prostate." He characterized it as a vestigial organ of but little use in our present stage of evolution, but owing to its peculiar anatomy and physiology, capable of doing much mischief; its principal function at this time appearing to be to produce an obstructive dam or valve at the neck of the bladder with all its attendant evils. Touching lightly on the pathology of its obstructive action, he entered at once into the practical management of the prostate patient; what warnings of danger to heed, and especially the signs of damage to the kidney, and the patient's general condition and ability to endure a major operation.

He gave statistics to show the greatly diminished mortality of the transurethral method of operation over the older perineal and suprapubic operation and the diminished hospitalization; all going to show a more cheerful outlook for the prostatic patient than heretofore. He called especial attention to the great value of small often repeated doses of laudanum (5-10 M every 2 hours) for the relief of pain, or where there is restlessness or psychologic imbalance in cases where the kidneys are seriously damaged.

Dr. Weltman then gave a demonstration of the transurethral operation of prostatectomy by means of a moving picture film. The lectures were listened to with intense interest by an audience of members of the Hillsdale County Medical Society and a number of guests—Drs. Wade, Holbrook, Schultz, Gist and Olmstead of Branch County and Whitney, Chase and Morden of Lenawee County Societies.

At the close, the doctors were given a cordial and unanimous vote of thanks by those present.

Owing to the lateness of the hour the society adjourned without taking up the other subjects on the program.

D. W. FENTON, *Secretary.*

NORTHERN MICHIGAN

The May meeting of the Northern Michigan Medical Society was held at the Perry Hotel, Petoskey, Thursday, May 12, at 5:30. There was an attendance of over twenty members. After a delightful dinner the meeting was called to order by President Stringham. There was no special program planned and the regular business was immediately taken up. The Committee on Public Relations had a report to submit to the society as a whole for discussion. This report was given and then a general discussion by the members was heard. After a lengthy and somewhat heated debate the report was altered to suit the need and finally passed. A report in detail will be mailed to each individual member of the society, poor commissioners of each county, and supervisors. The discussion having taken so long the meeting was adjourned until next month.

ERVIN J. BRENNER, *Secretary.*

SAINT CLAIR COUNTY

A regular meeting of Saint Clair County Medical Society was held Tuesday, May 3, 1932, at Edgewater Inn, Port Huron, Mich. The following guests were present: Doctors John L. Chester, Alexander Thompson and W. M. Lemke, all of Detroit.

After a very enjoyable dinner which was served to the guests and twenty-one members, Dr. John L. Chester read a splendid essay on "Thyrogenic Heart." After the paper was concluded a very wholesome and interesting discussion took place. The Society thereupon adopted a resolution to request publication of the paper of Doctor Chester in the State Medical Journal.

The following business was transacted: The minutes of the last regular and one special meeting were read and approved; the Secretary was instructed by the Society to send a telegram of sympathy to Dr. C. G. Jennings of Detroit because of the death of his wife; letters from the State Society were read with regard to dues and the appointment of a Public Relations Committee; the President announced the appointment of the following committee: George Waters, M.D., Chairman, W. A. Schaefer and F. V. Carney; Dr. Heavenrich spoke briefly of the survey concluded in Kent County and of the importance of the same; one bill was authorized paid; Dr. R. A. Windham discussed the necessity and the advisability of stopping the weekly advertisement now being printed in the local daily; after a short discussion the Society adopted a resolution to have the President appoint a committee with full power to act to confer with the local newspaper management looking toward the cessation of the weekly advertisement even though the members of the Society must needs defray the unpaid portion of their contracts; Dr. DeGurse reported to the Society concerning arrangements and cost of an annual get-together dinner to be held May 17 at Marine City, Mich.

GEORGE M. KESL, *Secretary-Treasurer.*

WOMAN'S AUXILIARY, MICHIGAN STATE MEDICAL SOCIETY

MRS. J. EARL McINTYRE, President, Lansing
MRS. W. E. McNAMARA, Secretary Lansing

HYGEIA AND THE MEDICAL AUXILIARY

The Woman's Auxiliary should make the promotion of the distribution of Hygeia one of their chief activities, because it is our own project and because it is the best method of imparting to laymen information on the care of themselves.

Long ago the medical profession felt that the prevention of disease was their responsibility as surely as the curing of disease and, ofttimes at the expense of personal risk and sacrifice, many members spent years of their lives studying methods of prevention.

Great progress has been made in the discovery of causes and methods of prevention of disease but the application of methods has not kept pace; with the result that the public became aware of their physical deficiencies—through examination of the soldiers drafted for the World War, of pre-school children and adults in clinics—and began searching for health. The public, not being able to discriminate between sources, often veered off from scientific

medicine and obtained information wherever it could be found. The medical profession, becoming aware of this, started searching for a far reaching method of giving scientific data to the public. Thus it was that Hygeia was born.

Hygeia should be accessible to the layman to educate him as to what qualifications he should expect of the person to whom he entrusts the delicate mechanism of his body; to inform him regarding the schemes and methods of quacks; so that he can learn of the nostrum evil; to teach him to disbelieve the extravagant claims of the advertiser; to acquaint him with the causes, cures and preventions of disease and to keep him advised of research work and of new discoveries and inventions in the field of health.

Hygeia gives a comprehensive education in health. Its information is up-to-date and authentic, as it is contributed by physicians, nurses, surgeons, dentists, home economic teachers, physical training teachers, health workers, educators, psychologists and dietitians. It is the only health magazine sponsored by the American Medical Association for the information and guidance of the layman in matters of health, and should be in every home, school, college and public library.

MRS. HUBERT M. HEITSCH,
State Chairman for Hygeia.

549 N. Perry St.,
Pontiac, Michigan.

BAY COUNTY AUXILIARY

The monthly meeting of the Woman's Auxiliary to Bay County Medical Society met on Wednesday evening, March 21, with Mr. Hauxhurst for a pot-luck dinner. The dining table was most attractive with spring flowers and delicious food, served from small tables through the living room. After the regular routine of business Keno was played and enjoyed by all present. The members supplied white elephants for prizes, which created much amusement. Time and place of next meeting had not been decided.

MRS. C. M. SWANTEK.

BATTLE CREEK AUXILIARY

The Battle Creek Medical Auxiliary is in very active condition. We have fifty paid members. Our meetings are held on the first Tuesday evening of the month. We usually have a pot-luck supper or dinner of some sort, which is followed by a business meeting which has already been staged by the Executive Committee. The evenings are then given over to a program. This month Dr. Perny of the Kellogg Bird Sanctuary gave an illustrated lecture on birds, and the pictures were interesting as well as beautiful, both in design and color. Mr. Walter Hastings of Lansing had an exhibit of enlarged still life bird pictures made by his department at Lansing. Last month the dinner was followed by a Bridge and Ping-Pong tournament. We have a year's program planned ahead, and each member has a printed program. We have spent about $400.00 this year on hospital charities. The money we raised by a rummage sale in the Fall, a card party in the winter and a per capita tax this Spring.

We have had sewing fests at three different hospitals. At one of these we made one thousand diapers, five hundred nightgrowns, and quantities of hot water bottle covers, and pneumonia jackets.

GETA BECKER, *Publicity Chairman.*

THE DOCTOR'S LIBRARY

THE WAY OF HEALTH INSURANCE. By A. M. Simons, member of the Research Staff of the Committee on the Study of Dental Practice of the American Dental Association; and Nathan Sinai, D.P.H., Associate Professor of Public Health, University of Michigan, and adviser to the Committee on the Study of Dental Practice. 216 pages, cloth bound, $2.00. Published April 19, 1932, by the University of Chicago Press.

After two years' investigation of eight leading European systems of compulsory health insurance, Mr. Simons and Dr. Sinai present their report in the book, "The Way of Health Insurance," recently published by the University of Chicago Press. It will serve as a warning to the physicians and dentists of this country that if they do not take a hand in formulating the policies of any insurance system that may be installed in the United States, the professions will find themselves in conflict with its practices when it is too late. The authors cite the case in France, when, after the insurance law had passed in the Chamber of Deputies, the physicians and dentists united, tardily, in an attack on it, held up its enforcement for two years, and virtually rewrote it.

The conflict between the professions and the laws, the authors point out, is due to the fact that health insurance always has been, and probably always will be, more "poverty" insurance, or "poor relief," than medical relief. It has its origin in a social need. Its cash benefits are a fundamental part of the system, and take the place of the pay envelope when sickness interrupts earning power. Social workers are largely responsible for the agitation for health insurance and for the formulation of its regulations. Politics also plays an important part. The authors state that the German system, which was the first, was originated by Bismarck in 1883 as a political move to get the support of the Social Democrats. Politicians under any government consider health insurance a palliative for social revolt. The pressure for social insurance becomes acute in times of depression, and history shows that attempts at legislative relief always follow economic depressions. This was true in Europe. It is true in America today. Economists say that 20 to 30 per cent of the sick do not at present receive adequate medical care. Health insurance bills are now before the legislatures of several states.

Another group that takes an active hand in formulating health insurance laws is the commercial insurance companies. This is natural, as they have the organization for the conduct of the business, and experience. In suggesting the error of allowing health insurance laws and regulations to be formulated by social workers, politicians, and commercial insurance companies, the authors make no reflection upon the sincerity or integrity of these agencies, but merely point out that since they know little of medicine and professional practice, only a minor consideration is given to these phases which affect the practitioner and the patient so vitally.

Their most detailed investigation was of the systems in Great Britain, Germany, and France, but a great deal of specific information is given about the systems of Denmark, Sweden, Norway, Austria, Belgium, Hungary, Switzerland, and other countries.

Germany has 44,000,000 insured, according to their statistics. Eighty-five per cent of all physicians give part or full time to insurance practice; a small group has a wealthy, non-insured practice; the rest starve, or practically so, especially the recent graduate, who

usually has to wait five to seven years to get into insurance practice. The insured get both medical and dental service free, and cash benefits.

Great Britain has about 16,000,000 insured (the families of the insured are not covered as they are in Germany). Any registered physician or dentist can require the insurance committee to put his name on the "panel" list, from which the insured makes his choice. This panel list is posted in a public place. The British system differs from the German in the further respect that specialist services are not included, and medical service is, as far as practicable, divorced from the social management that determines whether cash benefits shall be paid. The authors are decidedly of the opinion that separation of the medical service from the administration of cash benefits results in a more efficient and honest operation of the system.

In France—the system which the physicians and dentists practically rewrote after a two-years fight—the relation between practitioner and patient is virtually the same as in private practice. The patient has free choice of practitioner, the practitioner fixes his own fee, and the insured presents the practitioner's bill to the insurance organization and is reimbursed with a percentage of it—usually 80 per cent.

Broadly viewing insurance in action in numerous countries, the authors make three important points: First, notwithstanding the many faults and deficiencies of the various systems, no country that has ever tried compulsory health insurance would be willing to go back to pre-insurance days; second, insurance practice is generally conceded to have increased the average professional income; third, it has not apparently improved public health, nor diminished death rates or time lost in industry on account of sickness.

"One thing at least should be plain," they say, "and that is that he who says, without qualification, 'I am against health insurance,' or 'I am for health insurance,' is speaking out of the great depths of ignorance or great heights of prejudice. There is not one health insurance, but many, and each has a multitude of features, some good and some bad. It is more than within the bounds of probability that this country will follow the example of so many others and try some system of health insurance. Whether that system will bring all the evils along with what is good in previous systems depends upon how wisely those who write its terms pick and choose among the already ample experience of other nations."

CLINICAL ATLAS OF BLOOD DISEASES. By A. Piney, M.D., M.R.C.P., Director of Pathological Dept., Cancer Hospital, London, and Stanley Wyard, M.D., M.R.C.P., Physician Cancer Hospital, London. 2nd edition, with 38 illust., 34 in color, 105 pp. P. Blakiston's Son & Co., Inc., Philadelphia, 1932. $4.00.

In the short space of a hundred pages, the authors have treated the essentials of the various blood diseases. The text is concise and is well illustrated by colored plates of blood corpuscles. Eight plates illustrate the various normal types of blood cells and their inter-relationships. The other figures (colored to represent the staining given by the Giemsa technic), deal with blood pictures as affected by disease. The text relative to each disease consists of short paragraphs on symptoms, blood condition, complications, diagnosis, etiology, pathology, pathogenesis, prognosis and treatment. A brief account of the technic of blood examination and a glossary of hematological terms complete the work. The success of this atlas in its attempt to cover blood conditions in a concise practical manner is attested by the call for a second edition within two years of the first.

W. T. D.

OF GENERAL MEDICAL AND SURGICAL INTEREST

SUPPURATIVE PERICARDITIS

EDWIN M. MILLER, Chicago, describes a case of suppurative pericarditis in a boy, aged 8, in which surgical intervention was followed by complete recovery. As the boy came to the operating table, he appeared extremely sick and was apparently in great pain. Dyspnea, cyanosis and a bulging precordium were the marked symptoms. Under local anesthesia, with the patient in the sitting position, a 4 inch incision was made just to the left of the sternal margin, and the cartilages of the fifth and sixth ribs were resected so as to expose the bulging pericardium between the border of the sternum and the main trunk of the internal mammary artery. A gush of pus, as from a hose, shot into the air, and within a few seconds a pint or more of pus covered the field. The incision was then enlarged, the fingers were introduced about the heart, and no pocketing was noted posteriorly. The ends of two soft rubber tubes were anchored to the margins of the wound, and through these the cavity was gently irrigated with warm saline solution. Relief was immediate, and the boy left the table much improved. The postoperative course was practically uneventful.—*Journal A. M. A.*

SYMPTOMATOLOGY OF FRONTAL AND TEMPOROSPHENOIDAL TUMORS

FOSTER KENNEDY, New York, states that because of the paucity of definitely known physiologic centers in the frontal lobes, the diagnosis of tumor formation in these areas has long been difficult. Neurologists have been forced to look for main guidance to the results of pressure exerted backward on either the pyramidal tracts or their cortical origins, and to the presence of change in the mental state as a confirmatory factor. Alterations in mental and emotional condition appear more frequently here than from expanding lesions elsewhere. First is seen a lessening in power of attention; irrelevant replies are made. There develops a trivial and meaningless jocosity. Short periods of excitement occur, with foolish, inept and causeless laughter. There is a tendency to take offense easily, with, on the other hand, effusive apologies over trifles. Frontal epilepsy is frequent, characterized by petit mal and sudden attacks of mental confusion. With increase in pressure, hebetude replaces these earlier manifestations; the patient lapses at times into stupor and often can be roused only with difficulty. Frontal stupor is hebephrenic and less profound than is the morbid sleep induced by hypothalamic lesions; patients of the latter order can be roused to crystal-clear consciousness, whereas frontal stupors, by stimulation, are changed to a merely turbid or muddied awareness. There is frequent and characteristic yawning, and urinary incontinence appears earlier than would be warranted by the degree of drowsiness. Headache is less prominent than is usual; possibly the lowering of mental level makes complaint less articulate. There may come forced grasping or tonic perseveration of muscular action in the contralateral hand, from involvement of the anterior part of the corpus callosum and the frontopontocerebellar fibers. In the author's experience, the only station characteristic of disease in this area is titubation on the heels with a tendency to retropulsion. Compression backward often produces mild contralateral pyramidal tract signs, but one

must remember that a meningioma placed anteriorly may press across the midline of the brain, giving rise to a similar motor reduction and to reflex changes on the same side as the main growth. Phenomena of lateralizing value in temporosphenoidal tumors consist of the perversions of contiguous functions. The motor tracts and their cortical origins may become so compressed as to give rise to a considerable degree of hemiplegia, which is always most severe in the face, less in the arm, and least of all in the leg. Deep pressure may introduce thalamic coloring: paresis of emotional expression in the opposite face, and occasionally increased sensitiveness in the opposite side of the body. Rarely, athetosis may appear. The author has seen fluctuating pressure on the midbrain by a temporosphenoidal tumor produce fluctuating Argyll Robertson pupillary reactions. However, the most accurate localizing sign has been described elaborately by Harvey Cushing: a quadrantic homonymous hemianopic defect in the contralateral visual field. This occurs from involvement of Meyer's loop of temporal optic fibers; should pressure continue, the pulvinar or the main optic tract may be damaged, giving rise to a complete homonymous hemianopia. When aphasia is present, it is constant in character; a poverty of recollection of names, resulting in circumlocution and descriptive speech. There is perseveration of verbal error, with no difficulty in emission; word blindness does not occur. Almost never is there any word deafness; spoken commands are accurately performed; verbal mistakes are immediately recognized and, if possible, corrected. The power of discrimination in the value of words is proved by the fact that inaccurate promptings are invariably rejected. There is no true loss of word memory, only a dimming of word recollection. The memories are for the most part intact, but their facilitation is difficult, and the patient is unable by force of will to bring them above the threshold of consciousness, below which they lie latent and beyond the patient's conscious grasp.—*Journal A. M. A.*

ACUTE PYOGENIC INFECTION OF SPINAL EPIDURAL SPACE

SAMUEL S. ALLEN and EDGAR A. KAHN, Ann Arbor, Mich., report three cases of acute pyogenic infection of the spinal epidural space. The conditions most likely to be confused with epidural infection are poliomyelitis, leptomeningitis, abscess of the spinal cord and tumor of the spinal cord. Poliomyelitis may be ruled out by the presence of a sensory level and of a subarachnoid block. Lumbar puncture, with examination of the fluid, is usually sufficient to eliminate the second possibility. As to abscess of the spinal cord, the simultaneous appearance of the sensory and motor symptoms certainly suggests the presence of an intramedullary lesion, while pain, appearing several days before the onset of the paralysis, is in favor of extradural involvement. A spastic and not a flaccid type of paralysis would be expected in the case of spinal cord tumor. The severe febrile state would also be absent. Of course, these points of differentiation are merely generalities, as the diagnosis of the localization and nature of lesions of the spinal cord is very often an extremely difficult matter. And aside from an academic standpoint, a mistaken diagnosis of abscess or tumor of the cord is of no great import, as immediate laminectomy, on the sudden appearance of paralysis, is certainly indicated. From the onset, the disease assumes the character of a profound toxemia. The only method of combating the infection is, perhaps, operation with adequate drainage of all the tissue involved. As the process is always quite extensive, it requires the removal of many laminæ. The greatest involvement is in the midthoracic region, posterior to the spinal nerve roots. Following operation, the treatment of the wound depends entirely on the method most favored by the surgeon. Needless to say, the prognosis is quite poor, regardless of how early a diagnosis is made and how soon thereafter a laminectomy is done. Very few recoveries have been reported. The cord changes lead one to believe that unless operation is employed early in the course of the disease, the damage to the cord will be irreparable.—*Journal A. M. A.*

THE BAER MAGGOT TREATMENT OF OSTEOMYELITIS: PRELIMINARY REPORT OF TWENTY-SIX CASES

EDWARD HARLAN WILSON, CHARLES A. DOAN and DAVID F. MILLER, Columbus, Ohio, report that twenty-two of twenty-six children and adult patients, with either acute or chronic osteomyelitis, have been successfully treated with fly larvæ during the past eighteen months in the university osteomyelitis clinics. The average healing time for all cases has been ten weeks; for those lesions occurring in children, seven weeks. The type of scar remaining is a distinct improvement in that there is an obliteration of the cavity occasioned by operation and the disease process through the ingrowth of healthy granulation tissue with at least partial restoration of the blood supply. The authors emphasize the fact that the best surgical judgment must always be exercised in the individual case and precede the after-treatment with fly larvæ, if satisfactory results are to be obtained.—*Journal A. M. A.*

GASTRIC MUCIN IN TREATMENT OF PEPTIC ULCER

ARTHUR J. ATKINSON, Chicago, treated forty-three patients with history, signs, symptoms, laboratory evidence and roentgen manifestations of peptic ulcer with mucin. The patients were chosen because all the evidence concurred in the diagnosis. The therapeutic dosage of mucin totaled 90 Gm. a day, but three patients received as much as from 150 to 238 Gm. a day in a study of the effect on the gastric acidity. Ewald, fractional and motor test meals were given, and the stools examined for occult blood. The "acid test" as suggested by Palmer was used at first and later modified to coincide with Hardy's technic. The forty-three patients in the series became symptom-free within an average period of 1.7 days. The types of ulcers treated in the series are tabulated. The average duration of ulcer history, which was 5.2 years, indicates the marked chronicity of the ulcer diathesis in this group. Eighteen of the patients were awakened by pain suggesting gastric retention or continued secretion. Thirty-five of the patients in the series had previous medical management, spending a total of 208 weeks in hospitals, an average of 5.9 weeks per patient. All obtained relief on mucin with a total of twenty-five weeks of hospitalization, an average of 0.71 week per patient. Fifteen, having distress while on medical management when first seen, were continued ambulatory and obtained complete relief with mucin. Although any form of therapy may bring about a remission, there is no doubt that remarkable results have been obtained in patients who were previously having distress on dietary or alkali management. The time of observation has been too short to prove that the improvement is permanent in a disease in which the natural history is so variable. The author feels fully justified in believing that mucin treatment is conducive to healing.—*Journal A. M. A.*